Congress approves an increase in the H-1B visa cap – making almost everyone unhappy. PAGE 9

Cora Carmody, CIO at Science Applications International Corp., has big hiring plans. But other IT execs are standing pat. PAGE 12

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NOVEMBER 29, 2004 ▪ VOL. 38 ▪ NO. 48 ▪ $5/COPY

Be My Guest

IN DEPTH

HOSTED CRM

Staples, Sovereign Bancorp and other large users are taking the plunge on hosted CRM applications. Hosting pioneer **Salesforce.com** just raised its revenue forecast, and rivals such as **Siebel** are also expecting an upsurge in demand. But not everyone thinks hosted CRM is ready for the corporate world, Marc L. Songini reports. **PAGES 6 AND 7**

BENIOFF

CLEVELAND

ALSO INSIDE: Executives from Salesforce.com and Siebel state their rival hosting cases.

CA Hires 'CEO-Elect,' Dithers on User Show

Vendor cancels CA World 2005 conference, then restores event after customers complain

BY MATT HAMBLEN

Computer Associates International Inc. last week named 26-year IBM veteran John Swainson as its president and future CEO, anointing him as the successor to ousted top executive Sanjay Kumar. But in a rapid succession of events, the company also canceled its CA World 2005 user conference and then reinstated the event after getting complaints from customers.

In a letter sent to users last Monday, CA said it had decided to postpone the next CA World until the spring of 2006 in order to "redefine" the show, which attracts thousands of attendees from around the world. But in an interview on Wednesday, Swainson said the software vendor will hold CA World 2005 after all, although the conference will take place next fall instead of in April.

Swainson said he initially thought the decision to cancel next year's conference made sense because as a relatively new leader, it would be hard for him "to stand up and articulate a strong strategy" for CA. Without specifying what prompted the change in CA's thinking, Swainson said he realized that some users were concerned about losing momentum for new initiatives.

CA hasn't set a date for the conference, and Swainson said the event will have to be managed by an outside firm because some of the workers who helped run CA World in the past are no longer at the company. But he vowed that the conference will be "something that really does live up to its reputation."

Gregg Smith, a Windows NT administrator at Media General Inc. in Richmond, Va., said he's glad that CA is restoring CA World 2005. But he added that he would have

CA, page 16

ONLINE

Read more stories about CA on our Web site: a1640

IT Dabbles With Firefox, but Few Plan to Switch From IE

BY CAROL SLIWA

The Firefox Web browser has been causing a commotion among users and snaring snippets of market share from Microsoft Corp.'s Internet Explorer since June — long before Version 1.0 of the open-source software was officially released earlier this month.

But statistics suggest that corporate users aren't the major group fueling the growth of Firefox. The new browser's most dramatic spikes in usage are on weekends, according to Chris Hoffman, director of engineering at the not-for-profit Mozilla Foundation, which developed Firefox.

That observation was borne out by an e-mail poll of IT managers conducted last week by *Computerworld*. Only two of the 25 respondents said their organizations have standardized on Firefox. Another 11 said they have tried Firefox

Firefox, page 57

REALITY CHECK

ONLINE: More than 90% of users accessing U.S.-based Web sites are still running IE, usage data shows: **QuickLink 51064**

Anything BUT IT

RICH LILLASH

Fear of outsourcing has some grad students shunning IT for business degrees. By Dan Verton

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NEWSPAPER

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NAME
Ms. 3,000 Customer Web Servers Upgraded in Three Hours
REUTERS

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Saori Fotenos
IT Manager, *Reuters*

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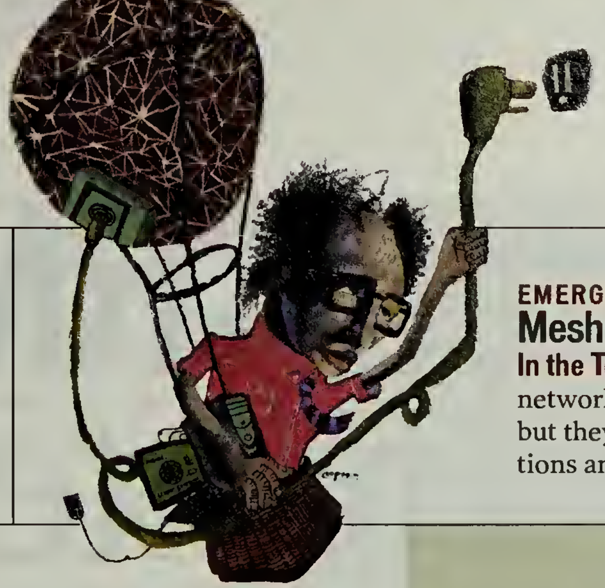

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Mesh Moves Into the Office

In the Technology section: Wireless mesh networking products can ease installation, but they must overcome throughput limitations and interoperability problems. **Page 27**

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Go Ahead – Miss My Deadline

IT MANAGEMENT: When some projects fall behind, it's the deadline that has to be jettisoned. Insisting that things remain on schedule works to a point, but it can impede good judgment, consultants Michael Patterson and Patricia Pruden say. **QuickLink 50594**

Ten Questions on Application Security

SECURITY: Abhishek Chauhan of Teros offers this checklist of questions to ask when evaluating products to safeguard your infrastructure. **QuickLink 49762**

The Vision Thing

STORAGE: Vendor misrepresentations have warped the original vision of storage-area networks, says columnist Jon William Toigo. **QuickLink 50806**

Hands On: Nintendo DS

MOBILE/WIRELESS: With the holiday shopping season upon us, *Computerworld*'s game expert Peter Smith takes a look at one of the industry's hottest gaming devices. **QuickLink 51021**

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Hosted CRM Looks to Step Things Up

Vendors cite large deals as a sign of growing acceptance of online apps, but skeptics remain.

By Marc L. Songini

IN DEPTH
HOSTED CRM

NOVEMBER has been a busy month for Salesforce.com Inc. The hosted CRM pioneer held its second annual user and developer conference, where it introduced a software upgrade that became available Nov. 15. San Francisco-based Salesforce.com, which went public in June, also reported third-quarter revenue of $46.4 million and raised the sales forecast for its full fiscal year.

And, perhaps most significant, the company announced a 1,500-user subscription deal with office supplies retailer Staples Inc. and a 2,000-user commitment from pharmaceutical services firm Quintiles Transnational Corp. Those are the seventh and eighth contracts that Salesforce.com has signed that involve more than 1,000 end users.

Salesforce.com CEO Marc Benioff said last week that he thinks hosted CRM is "now at the tipping point," with mainstream adoption of the technology starting to approach a critical mass of users. Rival vendors, such as Siebel Systems Inc., also are rushing to position themselves to take advantage of an expected upsurge in demand for CRM.

Chris Monica, senior vice president of sales and marketing at Houston-based EGL Inc., which operates under the name EGL Eagle Global Logistics, has already embraced hosted CRM. Monica said that three years ago, when EGL was looking for software to help standardize its global sales processes and make them more nimble, the $2 billion company decided to let someone else handle the IT headaches.

Until that point, EGL's 800-person sales force had relied on e-mail and other manual processes to track customer interactions and sales opportunities. Now sales personnel at the provider of transportation and supply chain information services use Salesforce.com's hosted applications. That has made it easier to share data, keep track of what's in the sales pipeline and coordinate marketing campaigns, according to Monica. "Salesforce.com has been a vehicle for the company to connect around the world in real-time fashion," he said.

The traditional knock on hosted CRM applications has been that they primarily appeal to smaller companies that would find installing and maintaining complex software from vendors such as Siebel or SAP AG a budget buster — as well as a potential technical nightmare.

A case in point is Document Sciences Corp., a Carlsbad, Calif.-based vendor of document management software with annual sales of about $25 million. David Barker, the company's IT director, said Document Sciences began using NetSuite Inc.'s hosted CRM applications 18 months ago and currently has about 70 workers accessing the software.

Prior to signing up with San Mateo, Calif.-based NetSuite, Document Sciences relied on a hodgepodge of third-party and homegrown sales and marketing applications, including Amdocs Ltd.'s Clarify product suite. The mix of software required IT staffers to store duplicate sets of customer information in multiple databases, Barker said.

He added that the first year's cost for using NetSuite's software was under $40,000 — less than it would have cost to renew the company's Clarify license — and that covered twice the number of end users. In addition, Barker no longer needs to worry about hardware support, database tuning and software upgrades. "I'm asleep when the upgrades get applied," he said.

InFact Group, an e-business consulting and systems integration firm in Plano, Texas, uses Siebel's CRM OnDemand sales and service tools. InFact, a Siebel business partner that works on projects involving the vendor's software, has 25 hosted users and pays a monthly fee of about $92 for each one, said Richard Napier, the company's business development manager.

"About a year and a half ago, InFact was a disparate set of companies around the globe, and our goal was process alignment to get us all singing off the same hymn sheet," Napier said. "But we're not a huge company and didn't have the time or infrastructure to deploy [CRM software]. We have to be smart and fast off the mark."

RATINGS

ROI Potential

Ratings of hosted CRM vendors on the ability of their technology to deliver a return on investment to users, based on a score of 1 to 5:

COMPANY	SCORE
RightNow Technologies	4.2
Salesforce.com	4.0
Siebel	3.8
ACCPAC International	3.6
NetSuite	3.4
The Savo Group	2.6
Entellium	2.6

BASE: Ratings are composite scores based on an analysis of deployment issues, software usability, support requirements, potential business impact and vendor track records on ROI.

SOURCE: NUCLEUS RESEARCH INC., WELLESLEY, MASS., AUGUST 2004

Even some of the big companies among the 10 hosted CRM users interviewed for this story think that way.

"We didn't want to get bogged down," said William Patten, director of sales and policy administration at

Benioff Sees Hosted Apps as 'the Future of Software'

It could be easily argued that MARC BENIOFF, Salesforce.com's chairman and CEO, has done more to promote the idea of hosted CRM and make it seem credible than anyone else in the software industry has. Benioff, a former Oracle Corp. executive, founded Salesforce.com in 1999. Now the company claims that its hosted applications are used by about 12,500 customers with a total of 195,000 end-user subscribers. Benioff recently spoke with *Computerworld* about the hosted CRM market.

How have things gone since you went public in June? I think our business is very strong. We're starting to see large companies come to us for mega-implementations, such as SunGard Data Systems, SunTrust Bank, ADP and Cisco Systems. We're seeing a model where we're doing something unusual and not done in other enterprise software companies – it's a true democracy. Very small companies, medium companies and even large mega-implementations are all done on the same piece of code.

BENIOFF

Did Siebel's entry into the hosted CRM market validate Salesforce.com offerings? If you go back and look at the history of all the things Tom Siebel said about us, it was that we won't be around in a year, this will never work, and big companies will not be interested in this. It's all on the record. Now it is the future of software [for Siebel as well as for us], and that's interesting.

Do you think the number of vendors in the hosted CRM market will eventually shrink? Like in all

Sovereign Bancorp Inc. in Philadelphia. The $60 billion bank began using sales force automation software hosted by Boston-based Salesnet Inc. two years ago. About 420 end users have access to the tools, according to Patten.

Salesnet CRM offers a simple seven-step sales methodology that "doesn't get in the way" of Sovereign's operations, Patten said. He added that the software is easy to use and flexible enough to handle business needs that are specific to the financial services industry. For example, Sovereign bolted on a customized incentive-payments utility to support its employee compensation processes.

Executives at Framingham, Mass.-based Staples weren't available last week to comment on their hosted CRM plans. However, Salesforce.com said Staples plans to roll out the applications in stages to workers in its contract sales division nationwide.

Quintiles, which reported $1.3 billion in net revenue for this year's first three quarters, has been using Salesforce.com's software in one business unit since August 2002. A Quintiles spokesman said the Raleigh, N.C.-based company now plans to deploy the software to its sales and marketing teams worldwide, replacing a set of homegrown applications. The on-demand nature of the hosted tools will let Quintiles scale up its use of them as needed, he added.

With those kinds of contracts in hand, Salesforce.com raised its revenue forecast for the fiscal year that ends Jan. 31 to as much as $174 million — up from the previous range of $165 million to $170 million. It also provided initial guidance for fiscal 2006, saying it expects revenue to reach as much as $285 million. That would represent a year-to-year growth rate of nearly 70%.

Not to be outdone, CRM market leader Siebel said this month that Deutsche Telekom AG's T-Systems International GmbH subsidiary plans to deploy Siebel's hosted software to about 1,000 sales workers worldwide. CRM OnDemand will be integrated with an existing 2,800-user installation of Siebel's packaged applications at T-Systems, an IT services firm that also plans to market the hosted software to companies in Germany and eight other European nations.

"Salesforce.com has been a vehicle for the company to connect around the world in real-time fashion.

CHRIS MONICA,
SENIOR VICE PRESIDENT OF SALES,
EGL INC.

Technical Shortcomings

The fact that more and larger companies are adopting hosted CRM software hasn't gone unnoticed by analysts. As a rule, though, big users are still keeping their distance from the technology because of well-placed skepticism about the ability to link hosted CRM applications to their in-house software and to support customizations through successive product releases, said Ian Jacobs, an analyst at Current Analysis Inc. in Sterling, Va.

"From the perspective of a smaller company, what's not to love?" Jacobs said. But if hosted CRM vendors want to continue going upscale, they will have to tackle some tough challenges, he added.

For example, Jacobs said that vendors need to offer expanded functionality, such as data quality services, without making the hosted technology too complex and thereby losing one of the features that differentiates their product from packaged applications.

Total cost of ownership is another issue that users need to consider, according to Jacobs. Hosted CRM vendors tout their offerings as being less expensive than packaged software, but Jacobs said that may not be the case when costs other than the purchase price are included in the equation. Gartner Inc. analysts made similar points in a report issued last May.

Hosted CRM sales total about $200 million now, compared with roughly $2.8 billion for licensed CRM software, said Erin Kinikin, an analyst at Forrester Research Inc. That makes the hosted approach "small potatoes in terms of revenue," Kinikin said. But she added that hosted CRM sales are growing at an annual rate of 20% to 30%, while sales of traditional products are flat or declining.

One user who passed on hosted CRM is George Chappelle, CIO at H.J. Heinz Co. The Pittsburgh-based food products maker runs Siebel 7.5 internally to help manage its promotional campaigns, and Heinz has also looked at hosted technology.

"But it's not very interesting," Chappelle said. "We already had the knowledge in-house." ◐ 51050

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markets in software, there's going to be a leader. Typically, the industry tends to aggregate around a leader – [Microsoft] in office productivity and operating systems, and it's true in databases with Oracle. The [hosted CRM] market is still young, and Salesforce.com is a young company, only in business five years. I'm still seeing the market take shape and form, and how it will turn out is up to the customers.

What about integration of your applications with back-office systems? Is that getting any easier? It's an irony of the market that people think it's hard to integrate with our service. We have a lot of customers with SAP or PeopleSoft or Oracle. They run Oracle applications like the [E-Business Suite] 11i payables and receivables, and it's integrated with Salesforce.

In a sense, doesn't hosted CRM put internal IT staffers at your customers out of a job? I've never found that to be true. I've never had anyone contact me and say, "You cost me my job." It's more likely a true statement when someone says they bought XYZ [software] and never got it up and running, and it's more likely that cost them their job.

– Marc L. Songini

Siebel's Strategy Gives Users Freedom of Choice, Exec Says

BRUCE CLEVELAND is senior vice president and general manager of Siebel's CRM OnDemand hosted software service and its development and marketing unit for small and midsize businesses (SMB). Siebel launched CRM OnDemand last fall in an effort to catch up to smaller and nimbler online software vendors such as Salesforce.com. Cleveland spoke recently with *Computerworld* about Siebel's two-pronged software strategy.

CLEVELAND

Didn't Siebel oppose launching a hosted offering for quite some time? I don't think we were opposed to hosting. I think in reality, our customers in the enterprise weren't really asking for it. There's a pretty strong appetite out there for it [now], and certainly that wasn't the case several years ago.

How do you think you stack up against Salesforce.com and your other competition? We'll offer hosted as well as nonhosted, or a hybrid of the two, and make it the customer's decision. That's where we're headed. It's not a conflict because the entire sales organization sells the entire product line.

But does CRM OnDemand cut into your license revenue stream for installed software? That's not the case. There isn't good revenue vs. bad revenue. There's a kind of revenue that comes from licenses, a kind from maintenance, a kind of revenue in the form of services and a fourth coming from subscriptions. More and more, we're going to build this kind of model where we don't have to do large quarterly transactions where 80% of the money is made going into the quarter and then 20% is made relying on Hail Mary kinds of things [to boost sales]. We're blending revenue streams to build consistent quarter-to-quarter growth and a profit engine that Wall Street can count on.

What's unique to your offering? The beauty of the single code path is you get to decide what particular [software] objects you want to express. We benefit from having 1,000 developers working at Siebel, and we only need a few to turn on [features] or turn them off to create the OnDemand product. One competitive advantage against someone like Salesforce.com is that our research and development dwarfs theirs. Salesforce.com may get closer to making a more complicated product by adding all these additional features to make it more competitive – we can pick and choose what we want.

Are you selling the hosted applications to the SMB market only? The truth is that while initially we had thought the product might prove to be primarily for the SMB market, the uptake has been quite strong in the enterprise space. We've got a number of companies you could classify as enterprise: Sprint, Marriott, Motorola.

– Marc L. Songini

AT DEADLINE

Staff Cuts to Cost HP $200 Million

Hewlett-Packard Co. plans to spend $200 million on staff reductions over the next six months, the company said last week in a regulatory filing. HP didn't specify the total cuts or which business areas they would affect. HP has regularly adjusted its workforce since buying Compaq Computer Corp. In the first nine months of its 2004 fiscal year, HP reported restructuring costs of $101 million. HP currently employs about 145,000 workers.

IBM Buys Insurance Processing Firm

IBM is acquiring Liberty Insurance Services Corp., the U.S. business process services operation of RBC Insurance. When the deal closes, LIS will become an IBM subsidiary focused on handling life insurance and annuity policy processing for several insurance companies worldwide. IBM bought the firm to capture part of what's projected to be a $2 billion global market next year. IBM will retain the 700 LIS employees.

Citrix Makes Play For VoIP Presence

Citrix Systems Inc. last week agreed to purchase Net6 Inc., a privately held maker of Secure Sockets Layer virtual private network technology, for $50 million in cash. San Jose-based Net6 has 30 employees. Citrix said the acquisition will boost its stable of secure remote-access technology and give the company a foothold in the voice-over-IP market.

Cingular Plans to Slash Force by 10%

Cingular Wireless LLC last week disclosed plans to cut about 10% of its 68,000 workers over a 12- to 18-month period starting next year. The company confirmed the layoff figure less than a month after completing its acquisition of AT&T Wireless Services Inc.

Users Still Victims of Oracle/PeopleSoft Saga

With resolution of takeover bid months away, the only certainty is uncertainty

BY MARC L. SONGINI

EMBATTLED ERP software vendor PeopleSoft Inc. last week refused to capitulate in its long-running battle with potential purchaser Oracle Corp., despite the apparent will of a majority of shareholders, keeping corporate users in limbo.

Pleasanton, Calif.-based PeopleSoft's board called on Oracle to raise its bid as Oracle appealed to PeopleSoft directors to lift their strong poison-pill anti-takeover mechanisms, which would likely make the deal unreasonably expensive for Oracle. A judge in a Delaware court has agreed to hear arguments in the case Dec. 13.

While the fate of the merger is still uncertain, recent events don't bode well for PeopleSoft users, who have struggled with the situation for months.

"What this means to customers is increased uncertainty caused by more legal wrangling," said John Matelski, deputy CIO for the City of Orlando, a PeopleSoft shop. "I'm comfortable with the products and services that PeopleSoft provides, and thus I remain hopeful that a merger/acquisition does not occur. Regardless of what the result is, it's in all parties' best interest that a rapid resolution occur."

John Schindler, CIO at lighting fixtures maker Kichler Lighting Group, a PeopleSoft shop in Cleveland, said, "Having now worked with Oracle E-Business applications as well as PeopleSoft in my career, I'm as committed as ever to the quality and lower cost of ownership that PeopleSoft provides Kichler." He noted that the takeover effort is by no means over, as the proxy and poison-pill battles continue.

"Selfishly, I want PeopleSoft to survive as an independent company," Schindler said. "I believe Oracle is trying to buy a customer list and will ultimately kill off the PeopleSoft applications. I'm hopeful that this will die during the poison-pill phase."

PeopleSoft's board declined to accept Oracle's so-called best and final offer of $24 per share, or $9.2 billion, despite Oracle's claims that 60% of PeopleSoft stockholders tendered their shares in favor of the sale prior to its deadline of Nov. 19. Oracle called the shareholder vote a "mandate" for approval of its hostile bid to buy its competitor. "We believe it is time to bring this matter to a close, for the good of PeopleSoft's shareholders, customers and employees," said Oracle Chairman Jeff Henley as the votes were tallied.

But PeopleSoft's board has refused to budge and has retained the poison-pill mechanisms. A. George Battle, chairman of the PeopleSoft board's transaction committee, said in a statement issued after the vote that "we would be willing to discuss an offer made by Oracle at an appropriate price -- but $24 is not that price."

At that point, Oracle responded that the two companies were "obviously at an impasse." Oracle's board had urged PeopleSoft to sell without having to shift the takeover fight to a Delaware court, which could force PeopleSoft to lift the poison-pill provisions, or to the shareholders via a proxy battle, which would take place next spring.

Although it looks like it will come down to a proxy fight, "this deal just moved one more significant step toward closing in Oracle's favor," said Joshua Greenbaum, an analyst at Enterprise Applications Consulting in Berkeley, Calif.

Many users just want the two vendors to work out their differences, no matter what the result.

Gary Riley, a business systems analyst at Matanuska Telephone Association Inc., a PeopleSoft World shop in Palmer, Alaska, said, "If they are just fighting for the best dollar-per-share figure, they should be sitting down at the table with Oracle." **51057**

Obstacles to Oracle's Bid for PeopleSoft

SUCCESSFULLY OVERCOME:

- Antitrust investigations by the U.S. Justice Department and EU
- Justice Department injunction
- Former PeopleSoft CEO Craig Conway, who opposed the merger
- Gaining the support of a majority of PeopleSoft shareholders

UNFINISHED BUSINESS:

- Lifting poison-pill provisions . . .
- . . . Or taking on PeopleSoft's board in a proxy fight next spring

---

Oracle Plans to Add BI Offerings

ORACLE is maneuvering to bolster its business intelligence market share with new stand-alone query, reporting and analysis tools and an extension of the operational reporting in its applications suite.

At the Oracle OpenWorld user conference next week, the company will introduce an unbundled query, reporting and analysis tool set that was previously packaged with its application server, as well as enhancements to the Daily Business Intelligence (DBI) prebuilt operational reporting tool that ships as part of its E-Business application suite, said analysts who have been briefed by Oracle.

Robert Shimp, Oracle's vice president of technology marketing, declined to provide details about the announcements.

However, Dan Vesset, an analyst at IDC who has been briefed by Oracle, said the company is rebranding the query, reporting and analysis tools from its application server. The rebranded, stand-alone tools will be sold separately, Vesset said, and they will support more end-user customization.

"They are certainly making a bigger push in BI," Vesset said. "They were always focused very much on the database, and the surrounding BI tools were secondary. There is a realization that BI should be a separate revenue stream."

Pricing information wasn't available.

Oracle also plans to release specific connections to transactional tables and will be adding the ability to answer more reporting questions with query tables in DBI, said Keith Gile, an analyst at Forrester Research Inc., who was also briefed by Oracle.

"This is not meant to be a replacement for traditional data warehousing, but rather an extension to the applications," Gile said. "It has limitations when it is compared to a full data warehouse but is a solid alternative to standard reporting."

Patricia Dues, president of the Oracle Applications Users Group and project officer for the Las Vegas city manager's office, welcomed the enhancements to DBI, which her office uses to report against Oracle purchasing, financial and human resources applications.

"It is a product that is of high interest to application users," she said. "It has some views already set up that are management-oriented, [and] it's more advanced than your typical report writer. Usually, you have to have a database person set up these views; this product comes with a number of them already there."

– Heather Havenstein

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HP Launches Software Automation Manager

BY MATT HAMBLEN

Hewlett-Packard Co. tomorrow will unveil a management automation software product and a new version of its help desk software at its annual European user conference, Software Universe, in Madrid.

The new HP OpenView Automation Manager product replaces the pricey Utility Data Center offering the company dropped last month [QuickLink 49774], analysts said. It includes technologies HP got when it acquired Novadigm Inc. and Consera Software early this year, as well as business intelligence software from HP Labs.

Automation Manager, which will ship in January, gives CIOs an automated predictive system for managing the IT services of a corporation, said David Gee, HP's vice president of worldwide software marketing. When demands change, the software automatically optimizes the configuration of services and applications to match preset service levels, he said.

Model-based Automation

For example, Gee said, if a corporation needed to add 1,000 e-mail users, the product would help model the process involved and automate the setup based on the projected length of the process and the desired level of e-mail performance.

At its heart, the new software relies on "model-based automation" instead of building the automation from basic scripts, he said. "It's a lot more flexible and robust," Gee said.

Frank Gillett, an analyst at Forrester Research Inc., said the offering is an important product for HP that is "in effect a replacement for the Utility Data Center." The UDC hardware/software bundle was priced in excess of $1 million and was called very complex by analysts. "Before this, HP had basically a muddle strategy where they wanted you to buy UDC and software," said Gillett.

Michael Hanzlick, project manager at T-Systems International GmbH, the Frankfurt-based networking branch of Deutsche Telekom AG, said he will test Automation Manager once it's available. The product should help make management of systems more precise, he said, adding that he isn't sure which features are most important.

T-Systems has been using OpenView products since 1996, gradually adding features as its global network grew to 350 locations with 3,500 servers and 68,000 clients. T-Systems added Novadigm management tools two years ago, and Hanzlick said he expects the integrated products to better manage the operation.

"It's ideal that HP and Novadigm work together," said Hanzlick. T-Systems uses Novadigm to create a "desired state model" of how a process should run in the event of changes in system usage.

Stephen Elliot, an analyst at IDC, said Automation Manager will provide a tighter integration of OpenView products. But, Elliot added, "I wouldn't say it's better or different" than products from competitors such as Computer Associates International Inc. or IBM's Tivoli Software unit.

HP is also expected to ship HP OpenView Service Desk 5.0 in mid-2005. It will feature a new Web-based graphical user interface and standard reports, as well as service-level agreement templates. **51075**

NEW PRODUCTS

HP OpenView Automation Manager

- Manages Microsoft Windows and Linux blade servers
- Support for HP-UX to come
- Costs $1,000 per server, or $1,800 per server bundled with HP OpenView tools

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H-1B Backers Want Bigger Increase in Cap

BY PATRICK THIBODEAU

The 20,000-visa increase that Congress added to the fiscal 2005 H-1B cap just before its holiday break left no one involved in the contentious issue happy, and IT trade groups said they will try to further raise the cap next year.

The proposed legislation, which was included in the omnibus federal budget bill approved over the weekend prior to Thanksgiving, would allow foreign nationals with master's and Ph.D. degrees from U.S. universities to apply for H-1B visas during the government's current fiscal year.

The current cap of 65,000 visas was reached on Oct. 1, the first day of the fiscal year.

Trade groups and IT vendors such as Microsoft Corp. and Intel Corp. had urged Congress to raise the fiscal 2005 cap, as had technology users such as The Goodyear Tire & Rubber Co. Despite the vote to do so, some H-1B proponents said that the legislators didn't go far enough.

The number of additional H-1B visas needed this year "is closer to 50,000," said John Palafoutas, a senior vice president at the AEA, a Washington-based trade group. Large numbers of students graduating from U.S. universities with advanced degrees in fields such as computer science are foreign nationals. Proponents of the cap increase argue that it's in the nation's best interest to keep these skilled graduates here and that an H-1B visa is a path to permanent residency.

But opponents say that's not necessarily the case.

Path to Green Card?

Many employers "don't use the H-1B visa to bring people into the U.S. and keep them here," said Ron Hira, an assistant professor of public policy at the Rochester Institute of Technology in New York. Often, IT services firms simply need to add workers at customer sites, according to Hira. "They're not trying to sponsor people for green cards," he said.

That's true at Tata Consultancy Services Ltd., a Mumbai, India-based IT services firm with operations worldwide. Tata has about 8,000 employees in North America, primarily in the U.S., and about 7,200 of them are here on some kind of visa. Among its U.S. workers, about 65% have H-1Bs, and the remainder hold L-1 visas, said spokesman Victor Chayet.

He added that many of Tata's U.S.-based employees are graduates of universities in India and that only a handful ever seek permanent residency here. The company doesn't discourage workers from applying for green cards, but its service delivery model is based on the ability to move people from country to country as needed. "Keeping that fluid workforce is to our benefit," Chayet said.

Groups representing high-tech workers opposed any increase in this year's H-1B cap. Al Gray, executive director of the National Society of Professional Engineers in Alexandria, Va., said current indications are that there "are no really serious shortages" of engineering and IT workers.

But Joanna Smith Bers, managing director of DB Marketing Technologies LLC, a consulting firm in New York, said she has had trouble finding job candidates from U.S. schools who have strong math and statistics training and who understand business.

"I would like nothing better than to hire Americans for these positions," she said. "My challenge is that the people who have the education and the background are coming from abroad." **51062**

MORE ONLINE

Visit our H-1B special coverage page:
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L-1 Visa Users Face New Restrictions

ALTHOUGH Congress raised the H-1B cap, it approved new restrictions on the L-1 visa program, which some critics view as a prime vehicle for shifting U.S. jobs to lower-paid workers.

L-1 visas let multinational corporations relocate employees to the U.S. through intracompany transfers. But legislators and IT job activists who want to rein in the L-1 program claim that some companies use the visas to bring in foreign workers to either replace existing employees or contract out to other businesses.

The latter practice is what the change proposed by Congress is intended to stop. Specifically, the measure would require that any "specialized knowledge employee" brought to the U.S. on an L-1 visa be controlled and supervised by the company that submitted the visa petition.

John Bauman, president of The Organization for the Rights of American Workers, a Meriden, Conn.-based group formed by laid-off high-tech workers, said the legislation should have a major impact.

Bauman said that even if U.S. workers lose 20,000 jobs because of the proposed increase in the H-1B visa cap, "they may gain 200,000 on L-1s not being able to work at a third party."

But others aren't so sure. "Whatever kind of law is passed, someone will find a way around or over or through it. So it's a matter of interpretation and how companies adapt to these new restrictions," said Vin O'Neill, senior legislative representative at IEEE-USA, a unit of the Institute of Electrical and Electronics Engineers Inc. in Washington.

– Patrick Thibodeau

BRIEFS

IBM, Honeywell in $250M Tech Pact

IBM and Honeywell International Inc. last week signed a 10-year engineering and technology services deal worth up to $250 million. The agreement gives Honeywell access to IBM's engineering expertise and is designed to speed Honeywell's production of network-centric battlefield components and systems. IBM will receive military and aerospace resources and expertise, as well as access to avionics and vehicle electronics customers.

Saab Taps Hyperion For Finance Project

Saab AB has agreed to install Hyperion Solutions Corp.'s Financial Management application to replace its internally developed consolidation system and spreadsheet-based reporting system. Financial details weren't disclosed. Saab executives said they expect the software to improve the flexibility of the defense and aerospace company's reporting system.

Linux Desktop Effort Gets a Boost

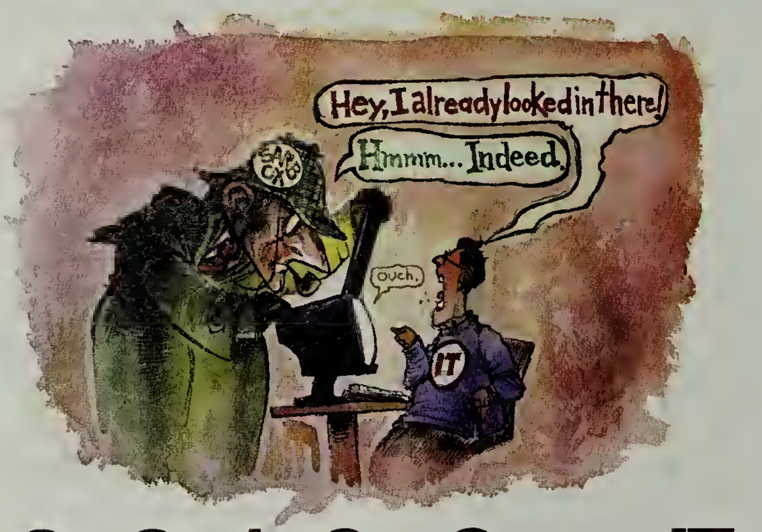
Scalix Corp., a maker of desktop applications for Linux systems, joined Open Source Development Labs Inc. in an effort to help push the spread of desktop Linux. Scalix makes Linux-based e-mail and calendaring applications. The nonprofit OSDL, formed to foster the spread of Linux into the enterprise, claims several top system and software makers as members.

Systemcorp Joins IBM's Rational Unit

IBM last week said it has completed its acquisition of Systemcorp, a manufacturer of project portfolio management software. Financial details weren't disclosed. Systemcorp's 70-person operation in Montreal will be integrated into IBM's Rational unit. IBM will ship Systemcorp offerings in 30 days.

ON THE MARK

HOT TECHNOLOGY TRENDS, NEW PRODUCT NEWS AND INDUSTRY GOSSIP BY MARK HALL


Hey, I already looked in there!
Hmmm... Indeed.
Ouch.
SARB OX
IT

MATTHEW FAULKNER

On Sarb-Ox, Savvy IT Shouldn't Overlook . . .

. . . what's under the covers of a fully compliant technology asset base. "That's especially true in the financial industry," says Ed Chopskie, vice president of enterprise technical marketing at San Diego-based Peregrine Systems Inc. Pointing to the "safeguarding of assets" section of Auditing Standard No. 2, Chopskie asserts that auditors will be keen to look at all internal operations that could "have a material effect on the company." In the financial services industry, which is heavily dependent on IT, virtually everything will face the auditor's sniff test, he claims. Chopskie says he expects that in addition to the obvious workflows and controls built into finance-related systems, auditors may nose around your IT procurement processes or the state of your software license compliance. Let's imagine that critical software you use relies on the continued viability of a vendor in Chapter 11, or that you have only one licensed copy of Microsoft Office, but it's installed on 10,000 desktops. Either situation could materially affect the financial health of your business. Not surprisingly, Peregrine suggests that using its asset-tracking and expense-control tools will help you achieve Sarbanes-Oxley compliance. Those products will be joined by process automation and asset optimization software next year, Chopskie says.

CHOPSKIE: Auditors will dig deep.

Microsoft CRM bucks subscription model . . .

. . . as 99% of its current users opt to license and install the applications. David Thacher, general manager of CRM at Microsoft Corp., says that only 1% of the more than 2,500 Microsoft CRM customers have opted to have the software hosted for them on a subscription basis. Although licensing's dominance is impressive, it's largely a result of the fact that Microsoft is still putting the finishing touches on its Service Provider License Agreement (SPLA), which will spell out the terms under which service providers can rent the software to users. Expect the lawyers to complete the SPLA tome in the spring, Thacher says. If, er, *when* it's completed, look for the percentage of subscription-based users to rise dramatically. Thacher says to also expect expanded reports in the next release of Microsoft CRM, thanks to the addition of new SQL Server Reporting Services functionality. A good guess is that the CRM unit's 200 developers will beat Microsoft's myriad lawyers and deliver the update in early 2005, ahead of the SPLA.

THACHER: New SQL Reporting Services due.

Don't lose business due to Web site errors . . .

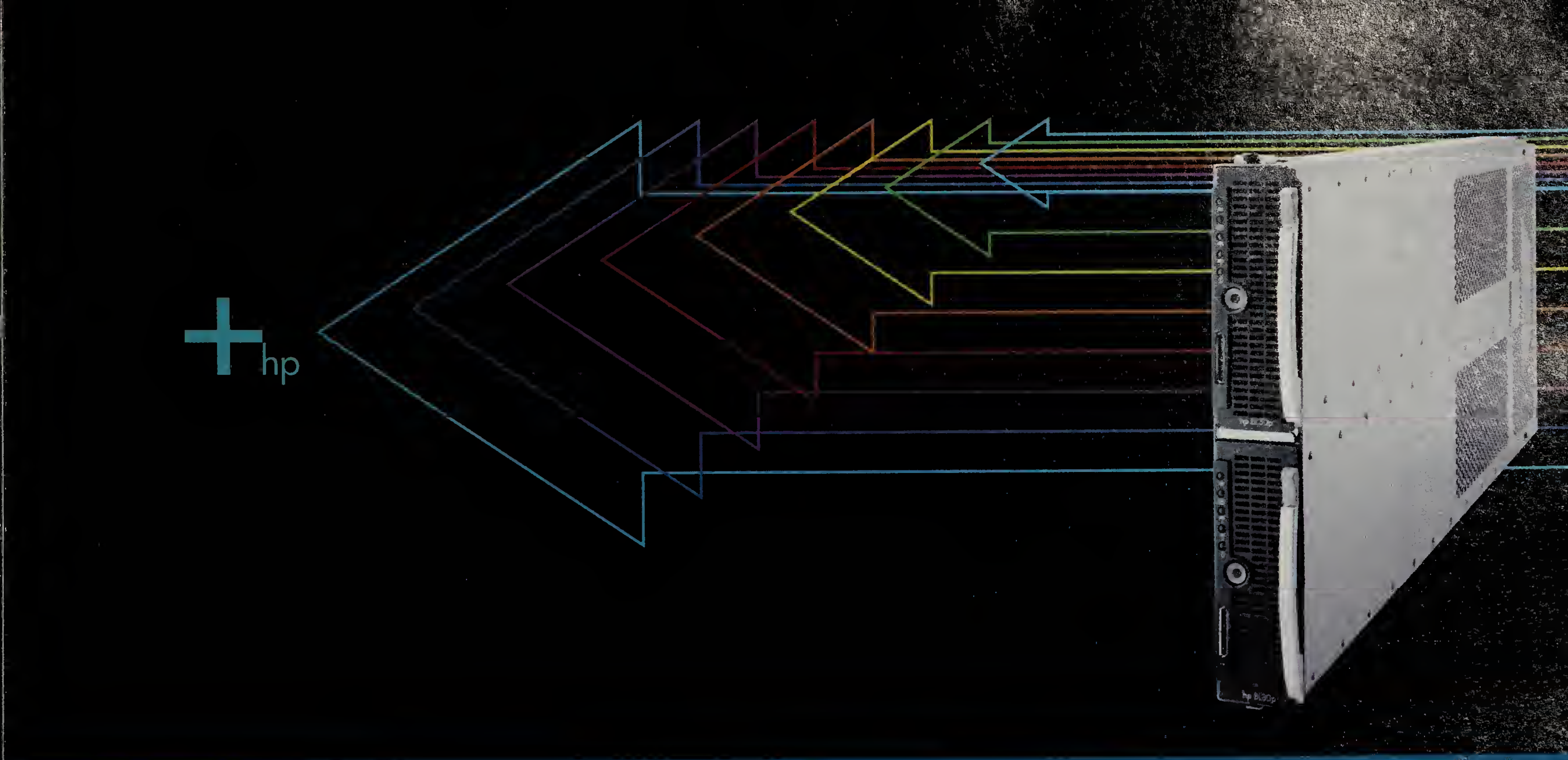
. . . that discourage online visitors. Fix the errors and save a bunch o' dough on your IT costs, advises Mike Gabrys, co-owner of BikeSmart.com, the online retail arm of Mike's Bicycle Centers of Northern California in San Rafael. Everything on BikeSmart's Web site is custom-written. "And we like it a lot," Gabrys says. But customization made it harder to troubleshoot and remediate persistent 400- and 500-class errors that the Web site was generating. In addition, the site's response time was disappointing, he says. At first, BikeSmart's developers thought the problem was in the company's ColdFusion-based online shopping application. But after installing an Xfire Web site monitoring appliance from Xaffire Inc., they discovered a flaw in their MySQL database implementation that was causing most of the problems. One of the biggest benefits BikeSmart has realized since installing the monitoring device is that lower-level IT staffers can use it to solve problems, freeing senior developers to work on other projects, Gabrys says. David Jilk, CEO of Xaffire in Superior, Colo., says Version 3.2 of the Xfire software will be released for beta-testing this week. It will add filtering capabilities and the ability to store the information it gathers in relational databases. Xfire pricing starts at $28,000.

Database unlocks performance . . .

. . . bottleneck in traditional relational systems. Kenneth Ruotolo, chief financial officer at Burlingame, Calif.-based Ants Software Inc., says that much like the QWERTY keyboard was designed to slow down typists, RDMS technology hailing from the late 1970s and early 1980s used "sequential locking" as a way to slow down transaction processing. That was done because the databases had to contend with tiny network pipes and time-sharing environments, he explains. Ruotolo claims that his company's Ants Data Server processes all transactions in parallel and "virtually eliminates" locking. Plus, he says, the software was designed to take advantage of huge amounts of memory as well as disk space, so it can use an entire storage-area network as its database memory if necessary. Ants Data Server 2.5 is due in the first quarter of 2005 with support for systems based on Advanced Micro Devices Inc.'s Opteron chip. The software costs $25,000 per CPU.

51002

Xfire monitors retailers' Web sites.



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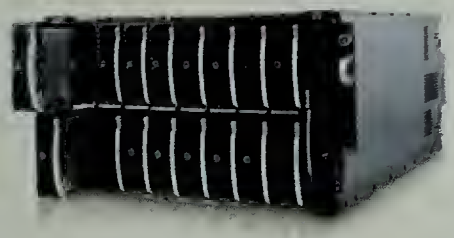

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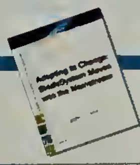

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CIOs, Recruiters Split On IT Job Prospects

CIOs say full-time hiring remains flat but contract workers are still in demand

BY THOMAS HOFFMAN

RECRUITMENT agency officials and corporate CIOs are painting very different pictures of the current outlook for IT hiring.

More than a dozen CIOs and corporate recruiters interviewed last week said their organizations are being prudent about adding full-time IT workers in order to hold down expenses. These companies are typically opting for contract workers to help meet their near-term project and support requirements.

At the same time, executives at recruiting agencies said at this month's Recruiting 2004 Conference in New York that job postings for IT workers have reached the highest levels since the dot-com bust in 2001, signaling a rebound in the U.S. IT job market.

Dennis Callahan, CIO at The Guardian Life Insurance Company of America, said "we're close to flat in permanent staff from year to year." Any near-term additions to New York-based Guardian's 401-person IT staff — which is augmented by 200 offshore IT consultants — will focus on replacing workers who leave and hiring specialists in technologies like WebSphere and IT security, Callahan said.

Wyndham International Inc. has no plans to expand its 82-person IT department with more full-time staffers, said senior vice president and chief technology officer Mark Hedley. Instead, the Dallas-based hotel chain will round out its workforce with contract workers as needed to meet peak demands. "We have taken a conservative approach on the economy and will match our IT spending with the growth of the company," Hedley said.

Mixed Outlook

That's consistent with the sentiment of other CIOs as economic forecasts continue to be mixed. For example, while some signs, such as the stock market's recent rise, have been positive, a composite index of economic indicators compiled by The Conference Board Inc. fell in October for the fifth consecutive month.

An uncertain economy is a key reason for the increased use of contract IT workers, said conference attendee Peter Weddle, CEO of Weddle's, a research, publishing and recruiting consultancy in Stamford, Conn.

Rick Stockfield, managing partner at Talenthire.com, an Atlanta-based business-to-business online recruiting exchange, said demand for IT workers has increased over the past three to six months. Stockfield cited particularly strong demand for IT auditors in response to the Sarbanes-Oxley Act, as well as demand for IT security experts.

While many CIOs remain cautious about adding to their payrolls, there are exceptions. For instance, Science Applications International Corp. in San Diego plans to increase its IT staff by a whopping 29% by early next year — from 556 to 716 workers — by adding both full-time and contract employees and by partnering with business units that deliver systems to customers, said CIO Cora Carmody. The company is hiring people with a broad range of skills, including architects, software developers and business analysts.

Juniper Networks Inc., a networking equipment vendor in Sunnyvale, Calif., expects to have an IT staff of 140 people by the end of the year, up from the 70 it had prior to its April acquisition of NetScreen Technologies Inc., said CIO Kim Perdikou. The company added 35 IT personnel from NetScreen and expects to hire 35 more by year's end to help support its growth. Perdikou estimated that Juniper will grow its IT staff by another 10% to 15% in 2005.

Truman Medical Centers Inc. has a few openings for full-time IT workers, said CIO Bill McQuiston. But he said he's somewhat concerned about the Kansas City, Mo.-based organization's ongoing use of contract IT workers to meet some of its short-term needs. The contract workers can't always transfer their knowledge to the health care company before they complete their assignments, McQuiston said. **51052**

CIOs Take Steps to Keep Pace With Change

New requirements muddle the search for top talent

BY LUCAS MEARIAN
COLUMBUS, OHIO

When recruiting a new CIO, companies look mostly outside their own walls because they lack confidence in internal IT management. Many CEOs fear the internal candidates lack well-rounded experience, a technology recruiter told about 150 CIOs gathered at the 2004 CIO Symposium here this month.

Several Fortune 25 CIOs spoke of their rapidly changing profession and of the search for a new breed of IT managers. The goal is to develop those managers internally, but that goal hasn't been met, they said.

"The one thing we found that companies don't do too well is engage their future leaders," said Gerry McNamara, senior partner at financial services and technology recruiting firm Heidrick & Struggles International Inc. in Chicago. In a speech at the symposium, McNamara said most companies are sorely lacking in IT leadership training programs.

A Heidrick & Struggles survey of its U.S. clients found that 61% of Fortune 250 companies hire outside talent as chief technologists, and 70% of companies use profile testing to help identify the ideal IT manager rather than turn to internal talent.

The findings weren't surprising to CIOs attending the conference, hosted by the Columbus Technology Council and Ohio State University.

Several CIOs from large companies acknowledged the need for better training of IT managers, particularly when it comes to understanding the business side of the company and managing projects.

Joseph Calvaruso, CEO of Mount Carmel Health System in Columbus, instituted a leadership development program in July 2000 to address a 24% annual employee turnover rate at his operation. "Employees join organizations, but they leave managers," he said. After the program was implemented, the attrition rate dropped to 4% this year, Calvaruso said.

Dealing With Mergers

Jody Davids, CIO at Cardinal Health Inc. in Dublin, Ohio, a distributor of medical supplies and equipment, said the biggest technical challenge facing CIOs in large enterprises is integrating multiple lines of business after mergers and acquisitions, a task that demands business expertise from the CIO and the managers he hires.

Cardinal Health is a year into a 24-month business and IT realignment to pull together more than a dozen companies that is has acquired over the past decade. "You cannot lead with technology. There needs to be some understanding of the business [by IT managers] if the investment is going to be wisely made," she said.

Attributes CEOs Look For in Prospective CIOs

- The ability to be a strategic business partner
- Strong business and technical acumen
- Cross-functional experience
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SOURCE: HEIDRICK & STRUGGLES INTERNATIONAL INC., CHICAGO

Davids also advised her counterparts to "deal decisively with those who cling to the past" and won't change as needed.

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"You need people in your organization who understand business first and IT second," added Fred Siff, CIO at the University of Cincinnati. IT managers must be able to help create business value and competitive advantage, he added. **51009**

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–Laura DiDio, The Yankee Group, April 2004
Linux, Unix, and Windows TCO Comparison

The Yankee Group, a global research and consulting firm, concluded that a significant switch to Linux from Windows or Unix could cost three to four times as much without delivering tangibly better performance or business value. These findings are based on a non-sponsored worldwide survey of 1,000 IT administrators and C-level executives in midsized and large enterprises.

To get the full study, visit **microsoft.com/getthefacts**

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GLOBAL DISPATCHES An International IT News Digest

U.K. Mulls Unplugging Faulty EDS System

LONDON

CONTINUOUS COMPUTER failures at the U.K.'s Child Support Agency have led the agency's chief to resign and prompted the government to consider scrapping a welfare case management and telephony system developed mostly by Electronic Data Systems Corp.

At a parliamentary committee hearing on Nov. 17, Doug Smith, chief executive of the Child Support Agency, said he's "seriously disappointed" that just 61,000 out of 478,000 single parents have received payments from the system and that $1.4 billion worth of support payments remain uncollected. Smith said he's resigning from his job.

Alan Johnson, secretary of the U.K. Department of Work and Pensions, which oversees the agency, said he's considering the "nuclear option" of pulling the plug on the system. Launched in March 2003, the system includes a Java-based application written by EDS and call center software created by BT Group PLC. The parliamentary committee issued a damning report about the system in July [QuickLink 49246]. During the hearing, Johnson read from what he said was an internal EDS memo that described the system as "badly designed, badly delivered, badly tested and badly implemented." A representative from EDS U.K. declined to comment or to confirm the legitimacy of the memo.

■ LAURA ROHDE, IDG NEWS SERVICE

GLOBAL FACT

1,200

Number of Wi-Fi sessions per week at the British Library in London.

SOURCE: BRITISH BROADCASTING CORP.

Start-up Claims Low-Cost RFID Chip

AUCKLAND, NEW ZEALAND

A START-UP VENDOR called Sandtracker claims to be on the verge of cracking the 5-cent cost barrier for radio frequency identification (RFID) tags. The Auckland-based company is producing a low-silicon chip that can be made for 6 cents and contains only a number identifying the goods that are tagged.

Sandtracker said the tags are being tested in several applications. A sports-event company is putting the cheap tags on the number bibs of runners to count how many cross the finish line during races. Another customer is using a special RFID assembly across the closure of crates and containers. Any tampering triggers an alarm, Sandtracker said.

Some versions of the tags don't conform to the emerging Electronic Product Code standard, but Sandtracker said it plans to work with the EPC standards body on the new chips.

■ STEPHEN BELL, COMPUTERWORLD NEW ZEALAND ONLINE

Intel to Spend $40M On India Chip Center

BANGALORE, INDIA

INTEL CORP. said on Nov. 19 that it will invest $40 million over the next two years at its 43-acre development center in Bangalore. That's on top of a similar investment in the past two years.

The new funding will be used to develop next-generation Centrino chip sets, laptop motherboards and Windows-based graphics drivers. The center will also develop enterprise-class microprocessors, including work on all of Intel's chips that support very large-scale integration technology. **51007**

■ JOHN RIBEIRO, IDG NEWS SERVICE

Compiled by Mitch Betts.

Briefly Noted

BAA PLC, a London-based airport operator, plans to use enterprise service bus (ESB) technology developed by Sonic Software Corp. in Bedford, Mass., to integrate flight, baggage and passenger information systems at Heathrow Airport's Terminal 5, which is under construction. BAA also tapped Sonic ESB to support its overall service-oriented architecture.

NetSuite Inc., a hosted applications vendor in San Mateo, Calif., announced a move into the Canadian market as it opened a 40,000-square-foot facility in Mississauga, Ontario. NetSuite said its hosted CRM, ERP and e-commerce applications have been adapted for the Canadian market's business terminology and accounting standards.

The International Moscow Bank in Russia has selected Flexcube banking software from I-flex Solutions Ltd. in Mumbai, India, as part of a technology modernization drive.

Continued from page 1

CA

preferred the conference to be held in April, prior to CA's scheduled release of upgraded help desk software. "By fall, the new releases will already be out," said Smith, who is president of the Mid-Atlantic Help Desk User Group for CA customers.

Tyler McGraw, a database administrator at paper maker Bowater Inc. in Greenville, S.C., said CA's change of heart on the 2005 conference was "a good thing." McGraw has used CA's Ingres database for the past 15 years and was buoyed by the company's decision, announced at CA World 2004 in May, to release the software under an open-source license [QuickLink 47216].

Waiting until 2006 to hold the next CA World could have stopped the momentum of open-source Ingres among end users in its tracks, McGraw said. "Obviously, Swainson made his decision to have it in the fall because many people felt the same way," he added.

Swainson, 50, was added to CA's board and given the title of president and CEO-elect for the time being. At his most recent job at IBM, he served as vice president of the company's worldwide software sales force. Prior to that, he was general manager of the application integration tools and middleware division within IBM's software group.

Interim Period

According to CA, Swainson will report to interim CEO Kenneth Cron during a transition period that's expected to last four to six months. Swainson will initially focus on product strategy and development, while Cron oversees the other parts of CA's business.

Jeff Clarke, CA's chief operating officer and chief financial officer, will report to Cron during the transition period. Clarke, who joined CA last March, is responsible for sales, marketing, business development and finance.

Cron has been interim CEO since April, when Kumar was stripped of his chairman and CEO titles as federal regulators and prosecutors investigated CA for alleged accounting irregularities. Kumar was subsequently named chief software architect but then left CA in June. In September, he was indicted on charges of securities fraud, conspiracy and obstruction of justice, to which he pleaded not guilty [QuickLink 49647].

"I'm looking to turn customers back into partners rather than adversaries.

JOHN SWAINSON, CA's president and CEO-elect

During a teleconference last week, Swainson said he wants to increase CA's share of the market for enterprise management software. "We have an opportunity to grow that lead and expand into new markets and niches . . . like wireless," he said.

But Swainson acknowledged that CA's relations with users often have been problematic. "There's clearly a legacy here of difficult customer relations. I'm looking to turn customers back into partners rather than adversaries."

Kumar was credited by many CA users with improving relations, and Smith said he hopes Swainson can keep alive the former CEO's "strong sense of what customers are after."

Swainson said that he's "not looking to dump products" and that CA is committed to supporting its software. But, he added, not every one of CA's 500 or so products "represents the strategic future of how customers want to build and manage their enterprises."

"I'll be interested to see what he does," said McGraw, who noted that CA "has a lot of competing products."

Swainson's hiring is "a good win for CA," said Stephen Elliot, an analyst at IDC. Elliott added that Swainson is a "very credible, very senior choice" who likely will help pick up the pace on software acquisitions "after CA flushes out where they are in product lines and where they want to take the company." **51047**

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Tools Bring Desktop Features to Browsers

BY HEATHER HAVENSTEIN

Macromedia Inc. and Nexaweb Technologies Inc. have brought out upgraded XML development offerings with updates for building thin-client applications with rich features native to the desktop.

Cambridge, Mass.-based Nexaweb this month enhanced its Nexaweb Client 3.3 tool with support for searching XML and the ability to take part of the application off-line, said CEO Larry Geisel.

Meanwhile, San Francisco-based Macromedia this month began shipping Flex 1.5, the latest version of its presentation server and application framework, with improved data display and visualization, more versatile skinning and styling, and support for new systems.

Geisel said Nexaweb plans to update its Nexaweb Studio add-in for third-party integrated development environments (IDE) by adding a visual JavaServer Pages (JSP) editor. It also plans to add a .Net client and open-source access to the Client engine by next year.

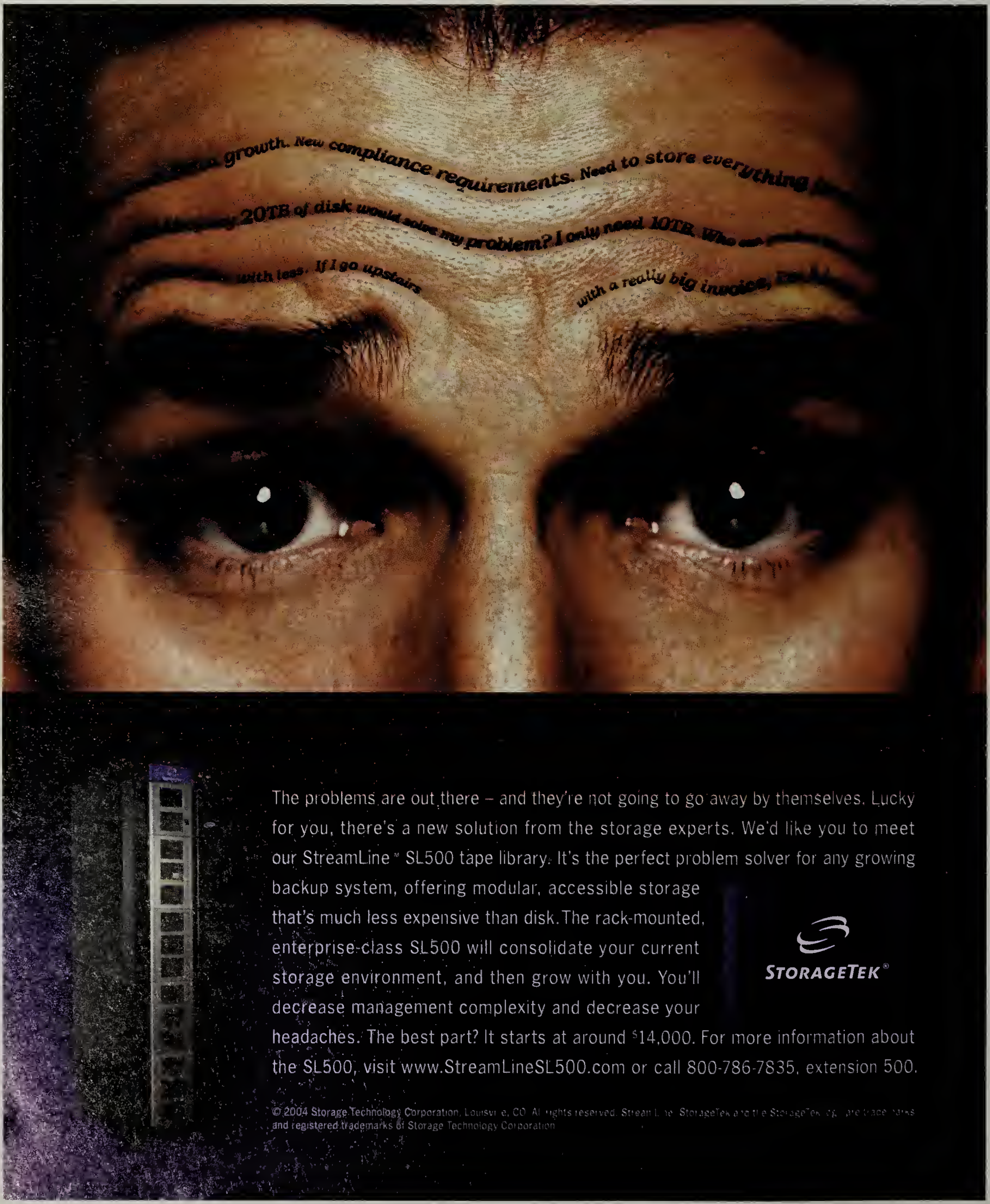
The Nexaweb tools can run in any J2EE application server, allowing developers to use JavaBeans, JSP and other coding structures to build XML user interfaces for Internet applications that need rich features like drag and drop.

Best Western International Inc. in Phoenix used Nexaweb's tool set to replace an HTML-based reservation, room rate and inventory application. An XML-based user interface reduced the time the system takes to respond to changes made at the company's 4,000-plus properties from 15 seconds to two seconds, said Harold Dibler, managing director of application development at Best Western. The interface also reduced network traffic by more than 90%, he said.

Macromedia Flex 1.5 allows developers to use a text editor or IDE to build rich-client applications, said Jeff Whatcott, Macromedia's vice president of product marketing.

Rotech Healthcare Inc., a medical equipment maker in Orlando, used Flex to build an Internet application for collecting orders and linking to billing systems via a controlled user interface. "You are able to make it look like what people are used to in a Windows application," said Michael Prichard, Rotech's IT manager.

Tim Farmer, software development manager at Choice Homes Inc. in Arlington, Texas, said his Microsoft-centric development staff used Flex to build a user interface for a dashboard application in about a week, which was much quicker than it would have taken without the tool. **50997**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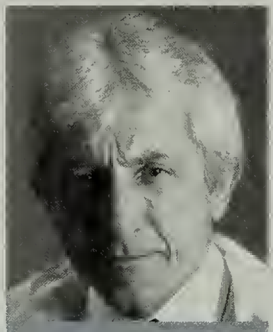
DON TENNANT

A Thanksgiving Rebuttal

HERE WE ARE on the Monday after Thanksgiving, and with the taste of burped-up cranberry sauce still fresh and every bathroom in the house still reeking of Glade Lavender Meadow, it's a time for requisite reflection. As it does every year, the long Thanksgiving weekend provided an opportunity for us all to articulate what it is we're thankful for without anyone sarcastically humming "Kumbaya" in the background. At least not loudly enough for us to hear. If the kids know what's good for them.



DON TENNANT is editor in chief of *Computerworld*. You can contact him at **don_tennant@computerworld.com.**

Following all that giving of thanks, journalistic balance compels me to report from the other side of the fence and articulate what it is I'm bummed about — to list some of the things that make me about as thankful as a fiftysomething IT worker at Best Buy. (Go to QuickLink 50984 if you said, "Huh?" when you read that.)

I'm bummed that Chris Stone, the former No. 2 executive at Novell, left the company earlier this month, just as it was beginning to jell on the strength of its Linux strategy. CEO Jack Messman is a really nice guy, but I know I'm not the only one who questions his wherewithal to run the company without somebody like Stone serving as puppeteer. Big-time loss for Novell's users.

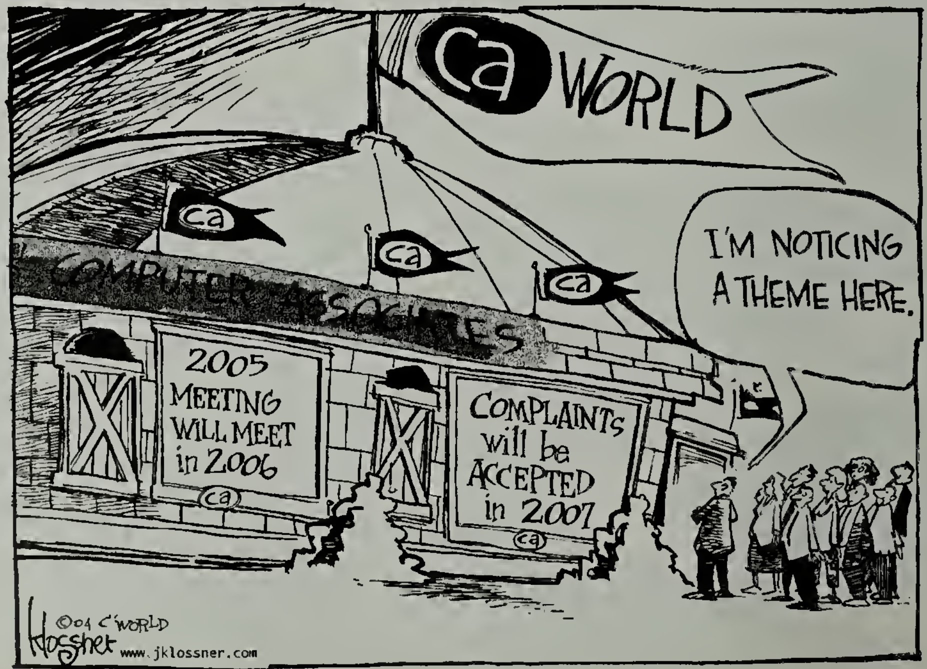
I'm bummed that Computer Associates can't get its act together to hold the CA World user conference in April as planned. CA users will have to wait until the fall of 2005 for the event, after being told that it would be postponed until the spring of 2006. But at least the company finally found a CEO after seven months of acting-CEO limbo [QuickLink 51033]. CA had issued a statement on Oct. 1 proclaiming that it would name a new CEO "in the next 30 to 45 days," and it missed that deadline by only about a week. I'm not sure, but I think the way CA counts days, it just made it.

I'm bummed that Congress popped open the H-1B visa cap the weekend before last by including a provision for 20,000 exemptions to the cap in an omnibus budget bill [QuickLink 50999]. I'm not bummed that 20,000 more people will get H-1Bs this year — hey, I say let the most qualified individual get the job, regardless of his citizenship or the ranting of xenophobes. I'm bummed that the system allows provisions like this to be tucked into appropriations bills rather than passing or failing on their own merits and forcing individual members of Congress to be accountable.

I'm bummed that a senior software engineer in Florida did a much better job than I did of making the point I was trying to make about offshore outsourcing in my Nov. 15 editorial [QuickLink 50699]. Here's an excerpt from a letter he wrote: "My attitude about the matter is that I know what I am doing. I am excellent at software development. If my company decides that this present job I am in must be filled by someone else (for financial reasons or otherwise), then that's fine — I'll simply go find something else to do. The whiners must live in constant fear that someone is going to take something away from them. Unfortunate. If they just realized that what they have should be what they have *earned*, then no one can take what they truly own away from them. The successful people in this country don't make excuses, they make themselves valuable and do the work." Brilliant.

I'm bummed that I'm out of space. This is fun. **51029**

Don Tennant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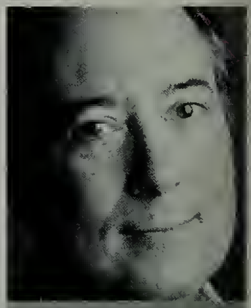
DAN GILLMOR

Priorities Are Askew At the FCC

IT MUST BE TOUGH being America's nanny, especially when there's so much real work to do.

Michael Powell, chairman of the Federal Communications Commission, and his feckless colleagues are on a roll these days. They're chasing so-called indecency from the airwaves with a zeal we haven't seen in decades, causing broadcasters to turn what's already a Pablum medium into even worse junk.

What does this have to do with the world of business and IT? Plenty — the serious telecom issues on the FCC's plate need attention, and they're not getting enough of it.



DAN GILLMOR is a columnist at the *San Jose Mercury News* and author of *We the Media: Grassroots Journalism by the People, for the People* (O'Reilly Media Inc., 2004). Contact him at **dgillmor@sjmercury.com.**

There's been at least a tiny bit of progress on one key issue: whether Internet-based telephony, or VoIP, should be regulated, and if so, by whom. The FCC recently said that it alone should have regulatory authority in this arena.

That's a good idea. Many states have been eyeing VoIP in a variety of ways, especially as something they might tax. But if anything in today's communications world is an interstate system, it's the Internet. And VoIP is just one more bit of software using the Net.

Now, one could make an argument that Internet calls to or from phones served by fixed-line carriers should come under the authority of the state agencies that regulate the regional telephone monopolies. That would create chaos, however, in an industry that's just beginning to be a serious player on the telecom scene. It would create chaos for customers, too. Federal preemption makes sense in this case.

If only this nod to common sense was matched by other recent FCC moves. Susan Crawford, a cyberlaw and intellectual property specialist who teaches at Yeshiva University's

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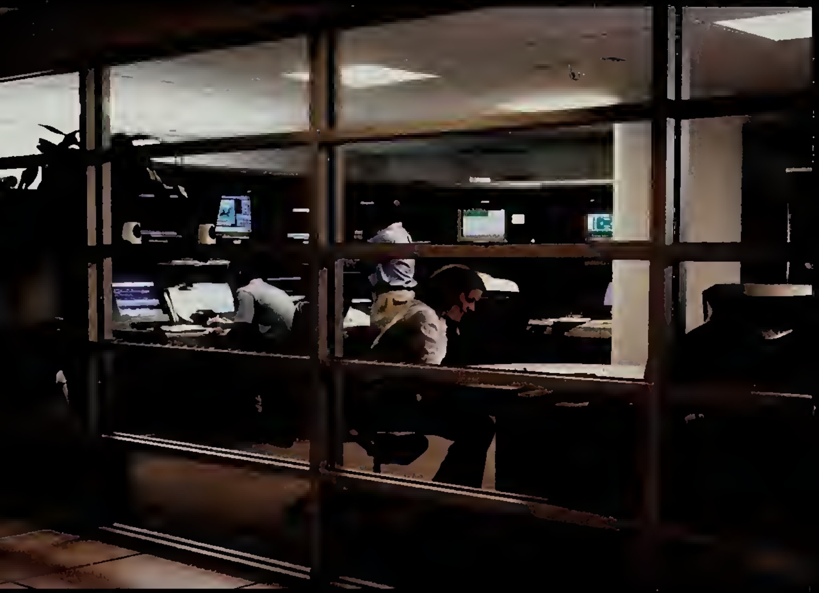

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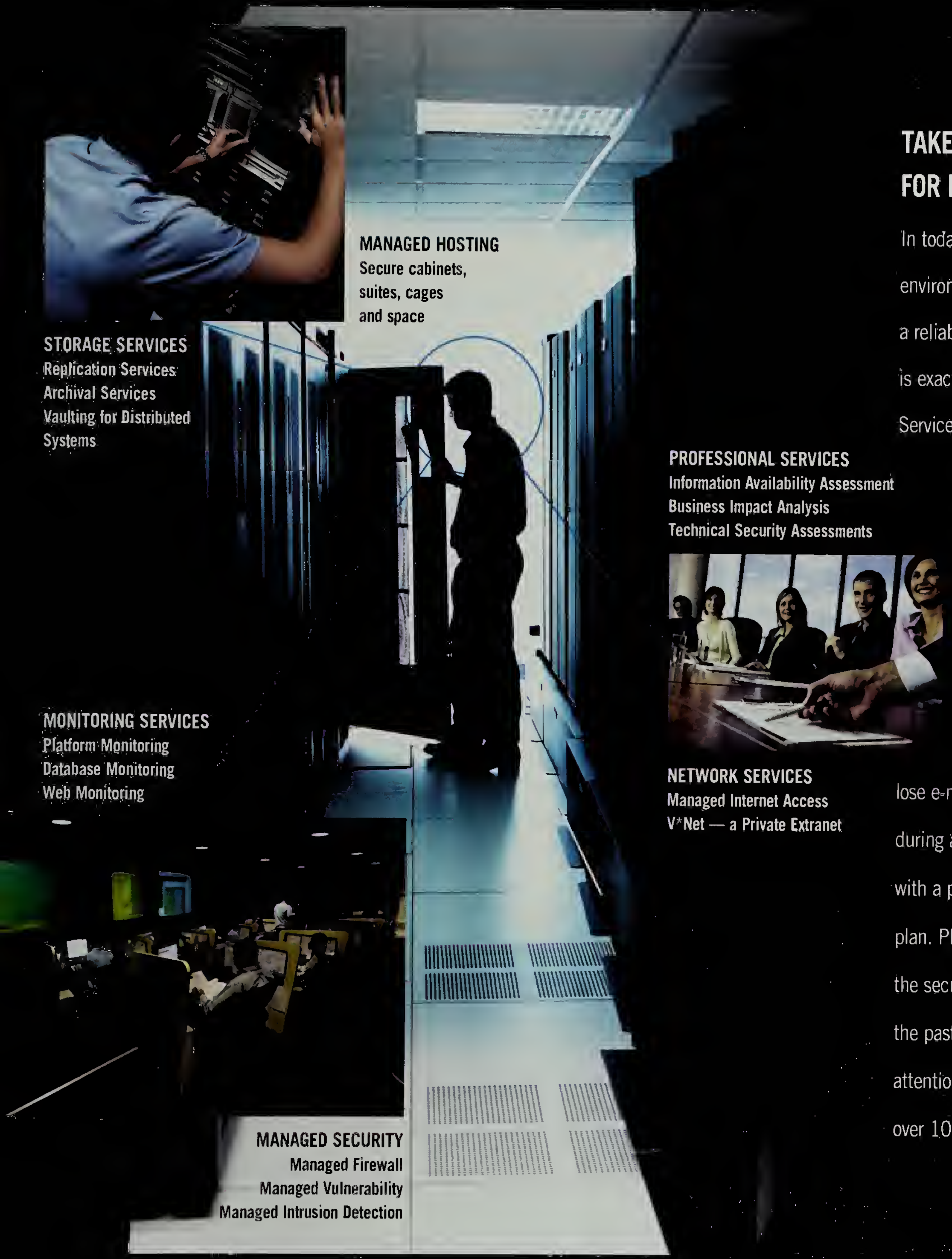

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Cardozo Law School in New York, recently spotted some remarkable language in an FCC legal brief.

The issue is related to the FCC's water-carrying for the copyright industry, which won a regulatory requirement that future digital video displays contain "broadcast flag" technology, a system in which a television will refuse to allow copying of digital content designated by the copyright owner.

Now, Crawford writes in her blog (*http://scrawford.blogware.com/blog*) that the FCC is saying this applies to any kind of digital device — and that the law gives these unelected federal bureaucrats "regulatory power over all instrumentalities, facilities and apparatus 'associated with the overall circuit of messages sent and received' via all interstate radio and wire communication." Yikes.

We can blame Congress for some of this. It writes laws that let regulators assume wide authority.

But like the spate of airwave censorship cases, such regulatory overreaching is a threat to basic freedom of speech. Now that Howard Stern is taking his act to satellite — an act that I personally find distasteful, but not nearly as worrisome as the bluenoses who want to censor it — look for moves to regulate cable and satellite transmissions, too.

We all have a stake in freedom of expression. But even if some of us don't care about that, these trends are bad for business, too. If technology innovators need permission to market inventions, as the copyright holders and their friends in Congress and the FCC seem to believe, then we'll get less innovation. And we'll all suffer if that happens.

I realize it's not IT's job to yell out in favor of freedom. It's everyone's job. **50986**

MICHAEL H. HUGOS

Agility Is a Frame of Mind

AGILITY results from a way of looking at the world. It doesn't come from any specific technique or a particular collection of technologies. Agility starts with the ability to accurately size up a situation in a timely manner. That means seeing potential problems and opportunities and devising bold and simple ways to avoid the problems and seize the opportunities.

IT can be a big part of what makes a company agile, or it can be a big part of what makes it a clumsy, slow-moving bureaucracy. One of the major determinants of this is the way your company answers the question, "Should we build our systems fast, or should we build them good?" The agile answer is to build them fast and good enough for now.

What does "good enough for now" mean? In a fast-paced, competitive world, opportunities arise quickly and then either fade away or evolve into something else. The advantage goes to companies that can develop systems that are ready when the business needs them and don't cost more than the opportunity is worth. The best way to do this is to create systems out of combinations of simple building blocks and repeatable processes.

MICHAEL H. HUGOS is CIO at Network Services Co., a distribution cooperative in Mount Prospect, Ill., that sells food-service and janitorial supplies. He is the author of *Building the Real-Time Enterprise: An Executive Briefing* (John Wiley & Sons Inc., 2004). He can be reached at **mhugos@nsconline.com.**

Here's an example: My company is a cooperative of member companies (each with its own internal systems) that band together to serve national accounts bigger than any single member can handle alone.

One of our customers is a large chain of stores that uses specially printed and colored items for the holiday season. It wants to make sure that we can deliver enough of these items to all of its stores nationwide during November and December. It also wants to track usage of these items and manage the purchasing process so that they're all gone by the end of the season.

In the past, we either didn't deliver enough product or the chain was left with excess inventory. In July of this year, we saw an opportunity to improve our service by creating a supply chain management system tailored to the customer's needs. We built it in August, tested it in September and had it in production by October. At the end of December, we can either shut the system down or expand it to track nonholiday items, depending on what the customer wants. Either way, we're delivering a lot of value at a very low cost to ourselves.

How did we do this? We created a simple system out of a combination of a few spreadsheets, e-mail, a couple of Web pages and some Java programs that took about two weeks to write and test. The system allows us to collect production and inventory data from relevant parties in the supply chain. Then it compiles this data into an end-to-end view of the supply chain that all parties can access over the Internet. Because everybody can see the big picture as well as the details, we now coordinate effectively with one another on the making, ordering and delivering of products.

If the customer wants us to expand this system to track nonholiday items (and it looks like it does), we will respond by writing a few more programs to enhance the volume and frequency of the data collection process. The rest of the system is still good enough for now. We will move with this opportunity a step at a time, stay flexible and reap tangible benefits as we go. **49716**

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READERS' LETTERS

Feeling the Heat

TO PARAPHRASE George Santayana, "Those who don't study the past are doomed to repeat it." The article "Data Centers Get a Makeover" [QuickLink 49777] proves it yet again. Electronic heat problems are nothing new, and I'm sure this one is no less solvable. At *www.coolingzone.com*, you will find eager thermal engineers who are determined to solve the heat problem so carelessly assumed to be solvable only by using the brute-force method, which requires that every square foot of a 50,000-square-foot data center be cooled. The footprint for both processors as well as storage is shrinking at a pace to keep up with demand. According to Moore's Law, capacity doubles every 18 months, but size remains constant or shrinks. And the ability to cool the electronics will keep pace (as history has shown). The net of this will mean there will be no need to prepare an entire 50,000-square-foot space to handle 500 watts per foot. So don't invest in megawatt generators just yet.

Bill Anderson
First vice president, Seattle,
wlanderson@qwest.net

YOU'VE GOTTA BE KIDDING! I've designed a number of data centers and *never* used either of the guidelines presented in this article: "Facility designers used to apply a simple rule of thumb: If the room was going to be *x* thousand square feet, it would need *y* tons of air conditioning. Or designers relied on equipment 'nameplates' that listed peak power usage based not on cooling requirements but on safety requirements." And I'm talking about both large rooms (7,000 square feet) and office-size rooms. Power requirements are one thing to determine electrical requirements, but the actual steady-state kilovolt-ampere requirements can be used and converted directly to tons of air. These are provided by the manufacturers for large equipment, but unfortunately, smaller servers often list wattage only. A safety margin is added, and an estimate of future requirements also. (This is yet another reinvented wheel that had been put to rest by mainframers by the 1960s.) The trick today, because of density, is distribution of that coolant.

John R. Carter
Chicago

A Voting Solution

I AGREE WITH Dan Gillmor about the need to develop open-source software voting applications ["Flawed Vote Could Give IT a Black Eye," QuickLink 50248]. But I think it's unfair to place a majority of the blame for the crummy state of voting technology on IT. IT projects fail for many reasons, but unrealistic expectations by those both inside and outside of IT often push a project into the bit-bucket or allow the implementation of projects that should have ended up in the bit-bucket. Unrealistic delivery dates and expectations are but two reasons why IT projects fail completely or provide poor solutions. It seems logical that voters might be served best if a nonpartisan government agency developed a standard open-source software voting application. Private industry can manufacture the hardware, but the software and firmware can't be proprietary. Of course, a more elegant, simple and cost-effective solution might be to adopt Oregon's voting system – a paper ballot received via the post office.

Kim Crutchfield
Irving, Texas

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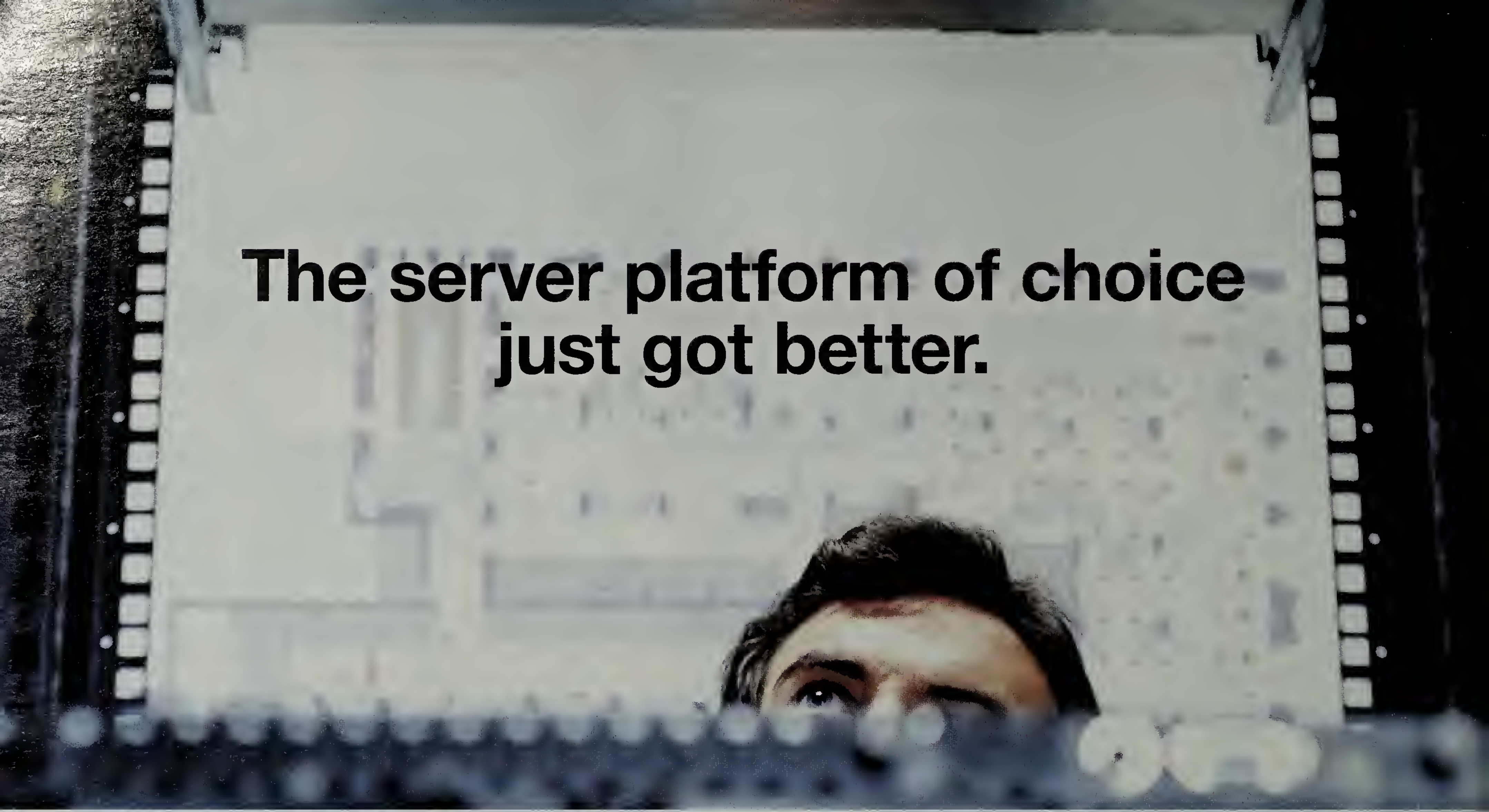

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TECHNOLOGY

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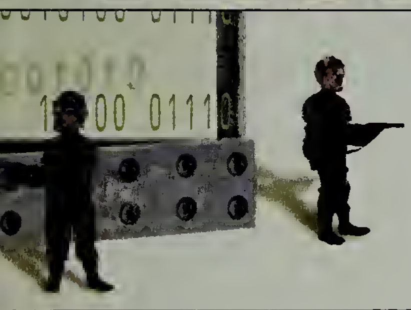

Guarding the Grid

Grid computing architectures have a way of amplifying the security issues that companies routinely deal with in nongrid environments. So it's important not to overlook those vulnerabilities when deploying grids, users say. **Page 32**

QUICKSTUDY

Digital Light Processing

This system for projecting images, based on a unique optical semiconductor chip from Texas Instruments, contains millions of tiny mirrors that are individually moved by digital signals in synchronization with a light source and color wheel. **Page 34**

SECURITY MANAGER'S JOURNAL

VPN Evolution Progressing to SSL

One VPN technology is decommissioned, but the replacement causes new problems, writes Mathias Thurman. Secure Sockets Layer offers some answers, but there are still problems to be resolved. **Page 36**

MESH MOVES INTO THE WIRELESS OFFICE

DAVID COOPER

OUTLOOK: Nascent 802.11 meshes make network installs and changes a snap. But compared with traditional wireless LANs, mesh networks have throughput limits and, for now, lack multivendor interoperability.

BY JOANIE WEXLER

A COSTLY AND COMPLEX aspect of today's wireless networks can sometimes be the very component they're supposed to eliminate: cabling. Emerging 802.11-based mesh networks attempt to resolve this irony by using more radio spectrum and less wire in the form of Ethernet cabling than traditional wireless LANs.

These are early days for WLAN meshes, but proprietary infrastructure products are commercially available. Organizations with difficult-to-cable environments and those that frequently move their WLAN nodes are among mesh's early adopters.

EMERGING TECHNOLOGIES

A wireless mesh infrastructure is, in effect, a router network minus the cabling between nodes — with the inherent rerouting for fault tolerance that such networks deliver. It's built of peer radio devices that don't each have to be cabled to a wired port like traditional WLAN access points (AP) do. Rather, each simply plugs into an AC power supply. It automatically self-configures and communicates with other nodes over the air to determine the most efficient multihop transmission path.

Today, the way these functions work is unique to each vendor. So enterprises that build mesh networks will likely use one vendor for a few years until standards are in place.

"Mesh is a reasonably important enterprise architecture going forward, because it dramatically simplifies installation," says Craig Mathias, a principal at Farpoint Group, a consulting firm in Ashland, Mass. "You take a node out of the box, plug it into the wall — end of discussion."

Supplying power to a mesh node can still be problematic. However, electrical outlets are usually far more abundant in buildings than Ethernet ports are, Mathias notes.

Only devices at the very edge of the wireless mesh hit wire — either to con-

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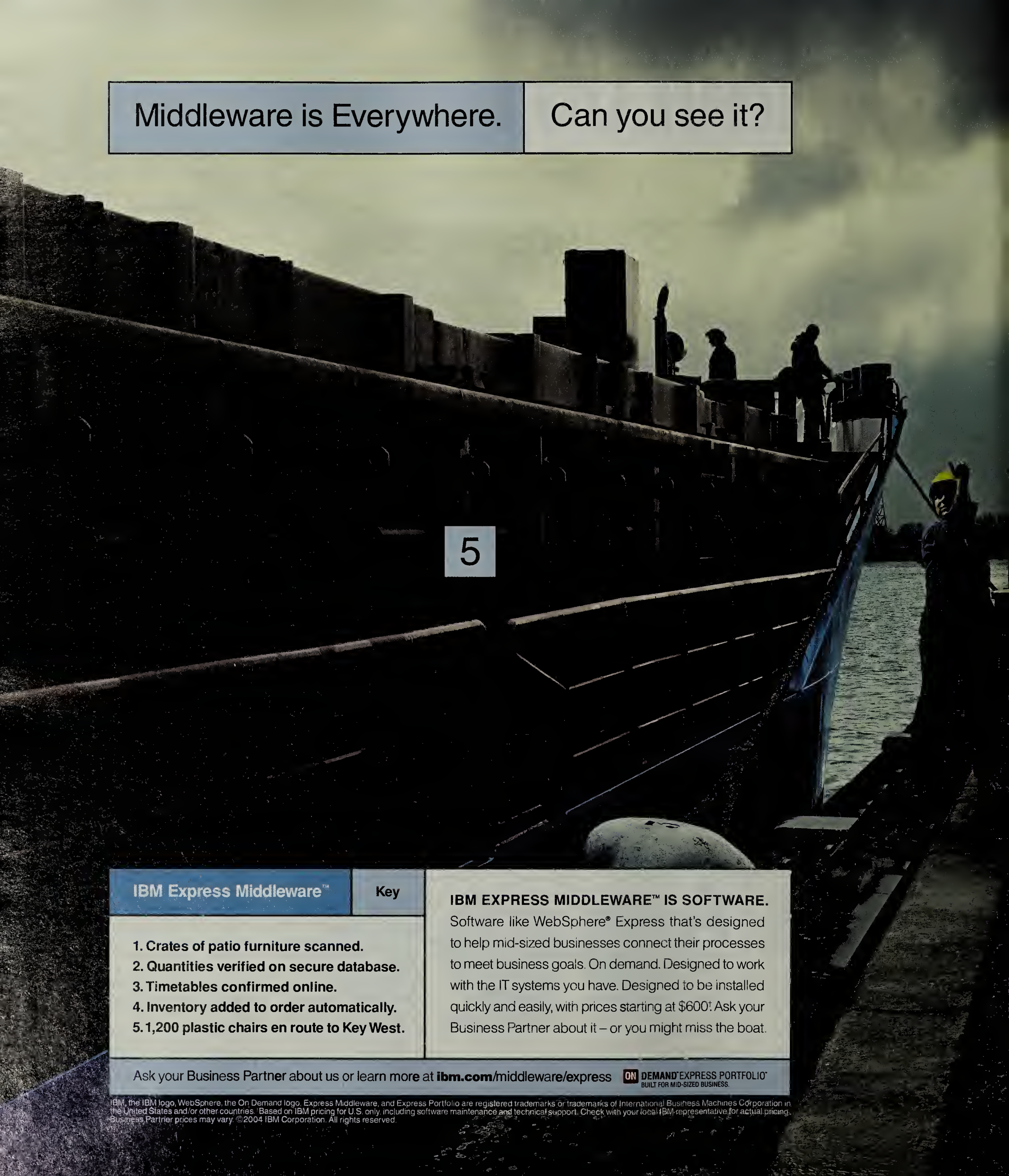

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IBM
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> **You take a node out of the box, plug it into the wall – end of discussion.**
>
> **CRAIG MATHIAS,** PRINCIPAL, FARPOINT GROUP

Continued from page 27

nect to a network switch or to standalone cabled devices such as printers and video cameras.

A design goal is to minimize the number of those wired devices and allow network managers to easily move wireless nodes as needed for capacity and coverage.

In a wireless mesh network, as devices are added and moved, the network automatically discovers topology changes and adjusts traffic-forwarding paths to optimize throughput.

Urology Clinics of North Texas replaced a traditional WLAN with a meshed Access/One system from Strix Systems Inc. in Calabasas, Calif., for just this reason. "We had intermittent problems with interference and shifting coverage holes," explains Kyle Nash, IT manager at the Dallas-based facility. This required him to frequently move APs to tune the network, which was laborious and time-consuming because cabling ran from each AP to an Ethernet switch.

"Now I just move APs on the fly. This means the network is up longer. It will also make things much easier as our network continues to expand," says Nash, whose goal is for the five-office, 200-plus user facility to eventually be about 90% wireless.

THE BASICS

The term *mesh network* refers to a network topology in which devices are connected with many redundant interconnections between network nodes. In a true mesh network – wired or wireless – every node has a connection to every other node in the network, whether directly or via hopping though intermediate nodes.

Looking specifically at wireless mesh networks, they are actually more truly switched wireless networks than those that use so-called wireless LAN switches.

In a mesh network, packets are forwarded wirelessly from node to node. Products called WLAN switches, on the other hand, don't actually support any wireless interfaces.

Note, though, that mesh architectures don't preclude the use of a WLAN switch or other centralized management architecture on the wired side of the network.

– Joanie Wexler

Early Players and Users

The flexibility provided by mesh networks is particularly helpful over large geographies and in hard-to-wire buildings. Cisco Systems Inc., for one, says it helped kick off the effort to develop the IEEE 802.11s mesh networking standard when it discovered that some of its customers were running Cisco Aironet APs in "repeater mode," whereby one AP backhauls packets to another.

"This was happening in large warehouses where customers either couldn't get to a location or were running into Ethernet's 100-meter cabling limitation," says Jon Leary, product line manager in Cisco's wireless networking business unit.

Similarly, consider hospitals using the services of Shared P.E.T. Imaging LLC in Canton, Ohio. The company offers mobile positron emission tomography (PET) diagnostic medical imaging services to facilities that can't support the service full time in-house.

Mobile scanning labs are equipped with an $800 Firetide Inc. 802.11b HotPoint mesh router attached to a PET scanner. The router in the mobile coach communicates images to another router inside the hospital, where they are relayed to a reader, says Marc Simms, director of IT at Shared P.E.T. Previously, the company dragged Category 5 Ethernet cabling outdoors after drilling a hole in the building.

Simms describes the cabling as "flaky and susceptible to weather." In one instance, cabling beyond the 100-meter Ethernet limit required the installation of more-costly fiber optics.

Simms says that before the company took the wireless mesh approach, an installation with a new customer took four to eight weeks and cost $2,000 to $4,000 — or $10,000, if fiber was involved. "Now, setup time is about an hour," he says.

Strix and Los Gatos, Calif.-based Firetide are the two mesh vendors that have made the greatest enterprise inroads. Firetide focuses strictly on wireless backbone applications — the company added 54Mbit/sec. 802.11a nodes to its portfolio this month — while Strix builds nodes that perform double duty as wireless backbone routers and traditional WLAN APs.

STANDARDS ON THE WAY...
IN 2007

The IEEE 802.11 Task Group S met in September to begin developing a standard for interoperable wireless LAN mesh infrastructures. There are at least two items that the standard will likely define:

1 **How a packet selects its multihop path across the wireless mesh.** Today, this is the secret sauce giving early vendors their value-add. Best-path selection is analogous to traditional Layer 3 wired routing protocols, such as Open Shortest Path First, or OSPF. In wireless configurations, though, the algorithm must be tightly coupled with Layer 1 radio metrics, accounting for physical-layer issues such as signal strength and interference when selecting a path.

2 **Authentication and security extensions for mesh.** Part of the standard's scope is still to be decided, says Steven Conner, wireless network architect at Intel Corp.'s Communications Technology Lab and technical editor for the IEEE 802.11 Task Group S. For example, he speculates that the standard could include the way a node selects a channel and what transmission power to use.

Conner predicts that proposals will be received during the first half of 2005 and that the standard will be complete sometime in 2007.

– Joanie Wexler

Strix supports 802.11a/b/g in a modular, stackable mode that costs $800 to $900. It also uses the faster, shared 54Mbit/sec. 802.11a or g for backhaul and 802.11b for user access. In addition, Strix says it can use the proprietary 802.11g channel-bonding mode supported in some WLAN chips to achieve 108Mbit/sec. optimum-shared bandwidth.

Like Strix and Firetide, Tropos Networks Inc. in San Mateo, Calif., makes both indoor and outdoor Wi-Fi mesh products that could be used by enterprises or public network operators. To date, though, Tropos products have been installed in metropolitan applications, such as citywide 802.11 hot-spot networks.

Similarly, Nortel Networks Corp., which began shipping mesh products last month along with BelAir Networks Inc. and RoamAD, focuses on outdoor applications such as municipal and campus backbones. Like Strix, Nortel mesh nodes also support traditional AP access, and Kanata, Ontario-based BelAir's products offer indoor coverage from the same, outdoor-mounted node. Nortel provides indoor WLANs via a product line from Airespace Inc., which it resells.

The enterprise applications for mesh are fairly targeted, given the relatively low speeds of Wi-Fi networks compared with gigabit-speed cabled Ethernet backbones. The actual throughput speeds of Wi-Fi are about one-half to two-thirds of their stated optimum bandwidth because of wireless overhead and interference.

Generally, adding more mesh nodes increases capacity. However, Wi-Fi bandwidth is shared, and while both Strix and Firetide cite per-hop latency of less than 5 msec, this could add up as meshes scale, particularly as voice applications emerge and more hops eat into the total voice-latency budget.

Throughput Considerations

"The concept of sustained [wireless mesh] backbone bandwidth is not applicable," says Sunil Dhar, director of product management at Firetide. "End-to-end throughput is determined by the number of wireless hops required to traverse the mesh, the density of the mesh deployment and the amount of interference."

"For backhaul, you're going to pay,

performance-wise," says Yuval Goren, a wireless consultant at Goren International in Saratoga, Calif. "Mesh is for applications where you can't get access wherever you want, such as temporary applications where it makes no sense to pay thousands of dollars to run cables."

The Computer History Museum in Mountain View, Calif., has such an application. When the previous occupant vacated the building a few years ago, it cut much of the Ethernet cabling out of the 120,000-square-foot building.

So the museum is using Firetide nodes for temporary exhibits and outdoor events, where generator power is used, and in small, inaccessible areas indoors, according to Mike Walton, the museum's director of IT.

The Computer History Museum runs a Hewlett-Packard Co. AP infrastructure hanging off the Firetide 11Mbit/sec. backbone, which serves places such as the lobby for event registration.

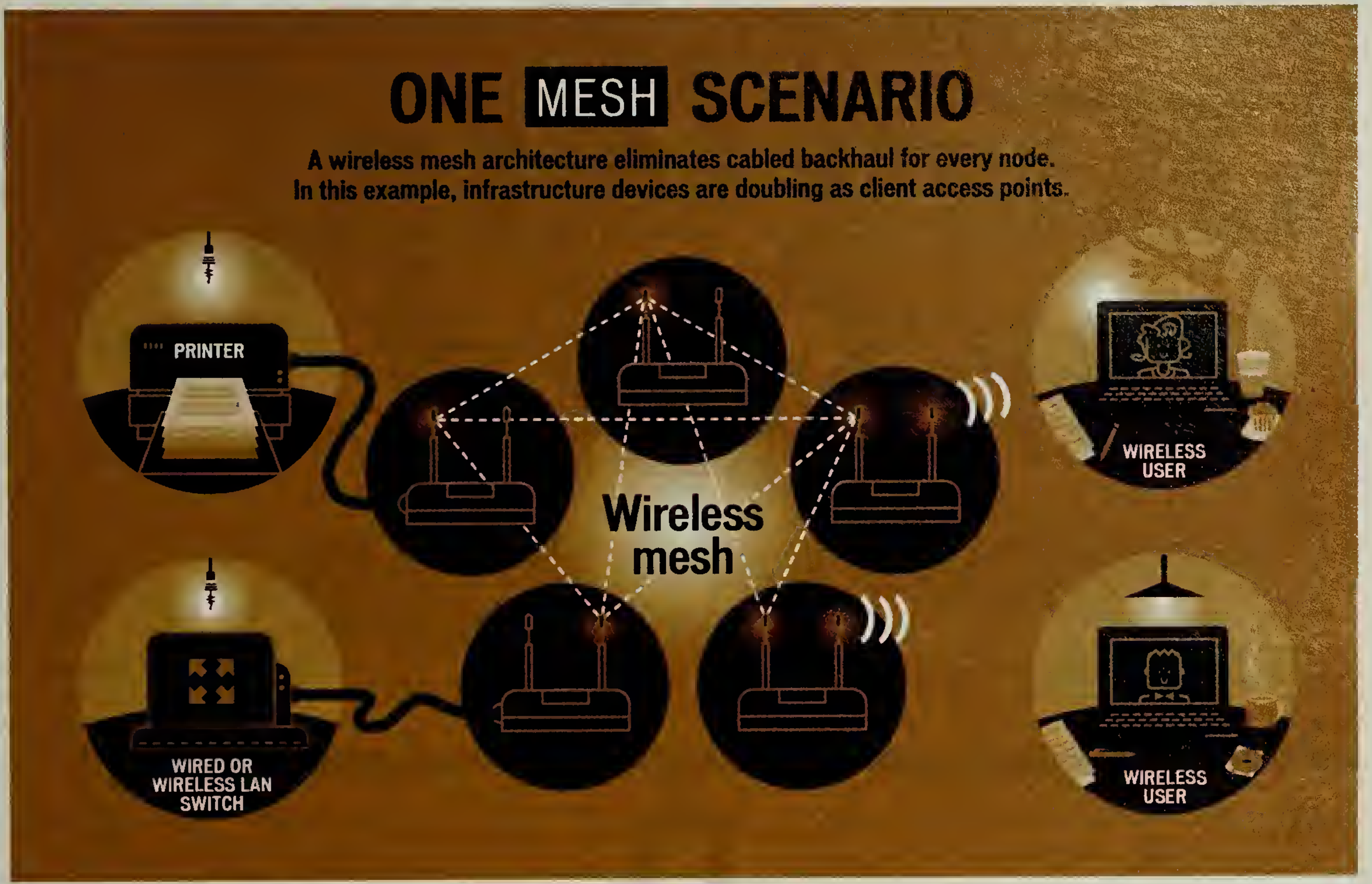
"The lobby had no options for an Ethernet drop. Now, if I want registration computers, all I have to do is plug a [Firetide] node into an electrical outlet," Walton says.

Similarly, The Science Place, an interactive museum in Dallas, has exhibits requiring both LAN and Internet access that are frequently moved. The 38,000-square-foot, two-building facility has 20-foot ceilings, 6-foot limestone walls and strict laws about what can be done to the building, says Michael Wright, director of IT.

The Strix network runs through both buildings "without having to string wires across the floor," Wright says. However, the organization retains a wired Fast Ethernet backbone with 10Mbit/sec. throughput to the desktop for permanent administrative uses.

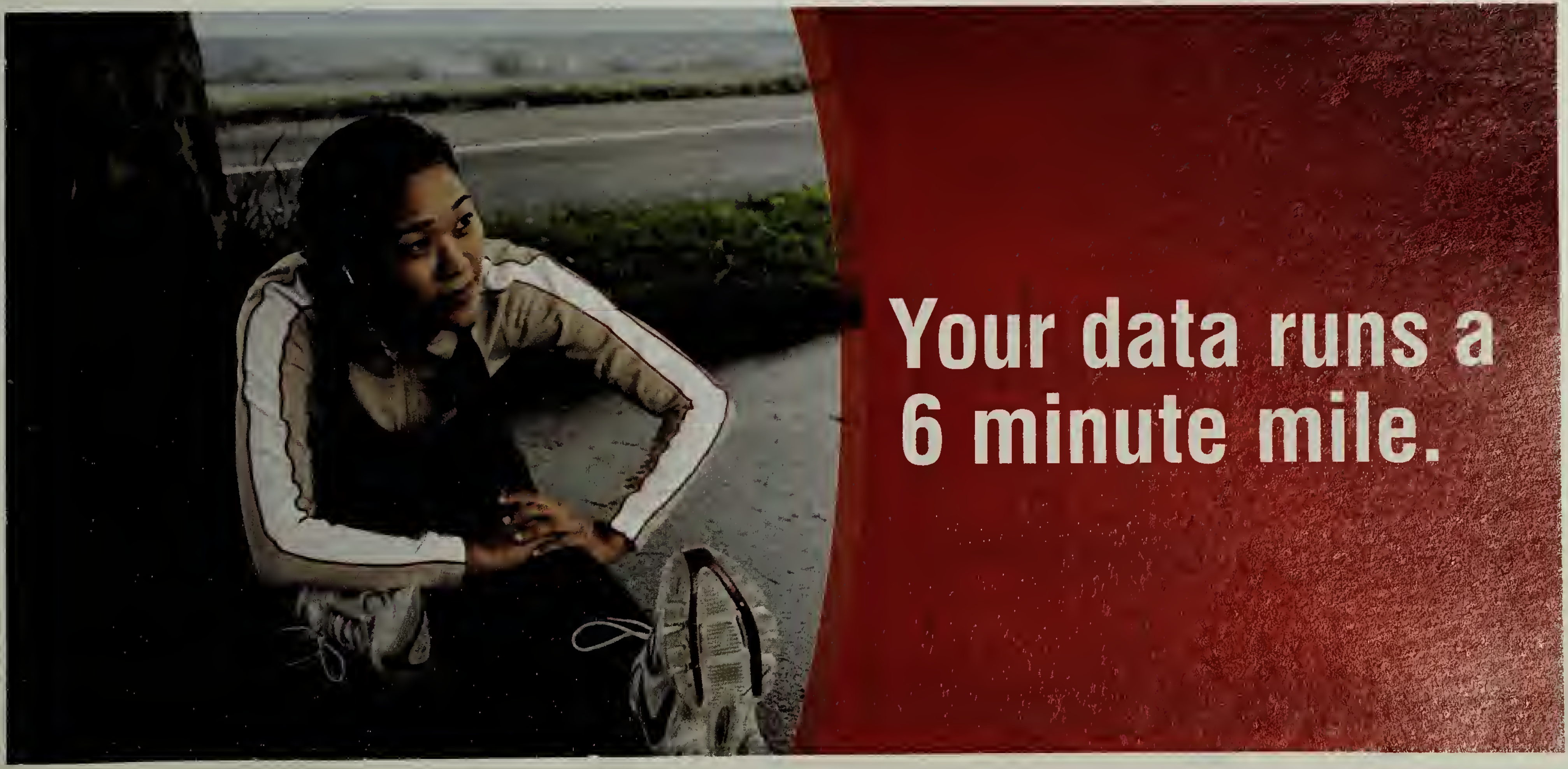
Jose Villarreal, director of technical marketing at Strix, counters that it won't be long before wireless is on par with wired speeds. "Some seriously smart engineers used to say we would never be able to deliver broadband over twisted pair. How many DSL deployments are being done each day now?" 50712

Wexler is a freelance writer based in Campbell, Calif. You can reach her at joanie@jwexler.com.



ONE MESH SCENARIO

A wireless mesh architecture eliminates cabled backhaul for every node. In this example, infrastructure devices are doubling as client access points.


Your data runs a 6 minute mile.

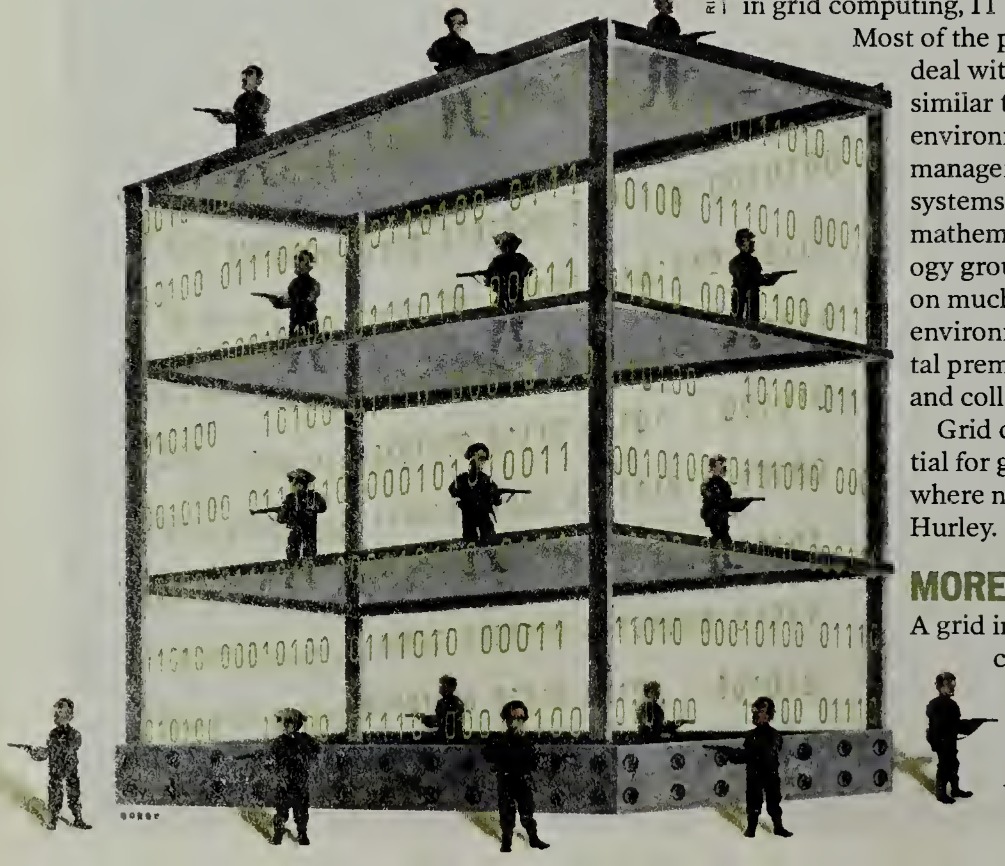
Guarding THE Grid

Security issues around grid computing are not new or different, but they grow with the grid. By Jaikumar Vijayan

DEPLOYING A GRID INFRASTRUCTURE can help companies dramatically improve hardware utilization rates and boost computing power. But the massive resource aggregation and wider end-user access enabled by grids also have the potential to magnify security risks, implementers say.

As a result, companies that are implementing grid technologies need to pay special attention to issues such as user authentication, authorization and access control, as well as auditing and data integrity — both when data is in storage and while it's in transit.

Ensuring that adequate measures are in place for responding to the effects of worms and viruses, which can be amplified in a grid setup, is also crucial in grid computing, IT managers say.



RICHARD BORGE

Most of the problems that IT staffs have to deal with in a grid environment are similar to the ones they face in nongrid environments, says John Hurley, senior manager for distributed software and systems integration at The Boeing Co.'s mathematics and computing technology group in Seattle. "But [they] take on much greater significance in a grid environment because of the fundamental premise of grids — access, sharing and collaborative computing," he notes.

Grid computing creates the "potential for gateways into an environment" where none existed before, says Hurley.

MORE POWER, MORE RISK

A grid installation harnesses the combined power of numerous servers and PCs to run applications and services as one large system. Grids have been used for years to run compute-intensive applications in academic and research organizations. The improved resource utilization and power delivered by grids have also begun to attract the attention of corporate America. A survey of 550 database professionals, released in January by Santa Cruz, Calif.-based Evans Data Corp., showed that one in five companies is planning to deploy grids during the next two years.

The potential severity of grid-related security problems depends largely on the context in which grids are being used, says Dane Skow, deputy computer security executive at the Fermi National Accelerator Laboratory in Batavia, Ill. "When you talk to people about grids, they have different scenarios in mind — everything from clusters in the same room run by the same infrastructure team to global power-grid-like infrastructures," says Skow.

Research grids, for instance, typically provide access to users from multiple organizations and security domains. Fermi operates a grid for high-energy physics applications that's accessed by more than 5,000 users in some 80 organizations — several of which are in Europe.

User access, authentication and authorization in such an environment can be a big challenge, given the fact that there's no single identity authority, says Skow, who is also part of the security group at the Global Grid Forum, a Lemont, Ill.-based organization with members from more than 400 vendors and user companies.

In contrast, a grid being run by a private-sector company typically uses internal resources and is accessed by users whose identities are already stored in an internal directory. As a result, it's easier to get a grip on identity management in a company grid than it is with grids in a research setting, Skow says.

CENTRAL MANAGEMENT NEEDED

Regardless of the manner in which grids are being used, there is "more of a requirement for a centrally managed ID infrastructure, whether it is PKI-based or Kerberos-based," says Clifford Neuman, associate director at the University of Southern California's Information Sciences Institute in Marina del Rey, Calif.

What's also required is a way to authenticate the clients and servers that are attached in a grid configuration, he notes. Because of the wider access enabled in a grid environment, it becomes crucial to ensure that data flowing through the network comes from a trusted source and not an imposter.

There are several methods currently available to do this, Neuman says. In a public-key infrastructure environment, for instance, servers and clients could mutually authenticate each other using digital certificates issued by a trusted authority. In a Kerberos setup, the same thing could be accomplished via encrypted keys stored in advance on a Kerberos authentication server, he suggests. Other methods include the use of Secure Sockets Layer technology to authenticate servers by clients before starting an encrypted session.

Companies that are deploying grids also must protect data during transmission on the network via encryption, says Jikku Venkat, chief technology officer at United Devices Inc., an Austin-based vendor of technologies for aggregating computing resources into clusters and grids. In addition, companies must put mechanisms in place to guarantee that the data isn't tampered with in any manner while it traverses the grid, according to Venkat.

Both measures are needed because anyone connected to the grid could access, modify or delete data flowing through it, either accidentally or maliciously, Venkat says.

United Devices attaches checksums to data before it's encrypted and then verifies that the checksum is the same when the message is being decrypted to ensure that nothing has been tampered with, Venkat explains. "We also recommend that only digitally signed code modules are permitted on a grid. If it is not signed, don't run it on a grid," he says.

There are also certain security concerns that get "amplified" in grid architectures, says Lee Cooper, chairman of the Enterprise Grid Alliance, a San Ramon, Calif.-based consortium of vendors and users.

One obvious example is the threat from worms and viruses. The same highly automated and efficient manner in which resources are allocated on a grid could be used by a malicious attacker to his advantage, Hurley warns. As a result, "keeping all grid resources fully patched and configured securely begs for some sort of centralized solution," Cooper says.

Good incident-response mechanisms should help minimize the impact of such attacks in case one occurs, Hurley says.

CAREFUL WITH POLICIES

Another crucial area with security implications is policy reconciliation on a grid, according to Skow.

Because grids can run different applications at different times, companies should have a clear understanding of the various policies — such as user access restrictions or the authentication requirements — that are attached to each application, Skow says.

"There needs to be some consistent and congruent way to mediate those rules. And it has to be done in a very significant way" before companies can take full advantage of grids, Hurley says.

Addressing grid security may not involve new technologies, but because of the increased potential vulnerability, protective measures become more urgent.

Grid architectures in the enterprise face the same security issues that one sees in a nongrid environment, so "clearly, these need to be addressed," Cooper points out.

But, he adds, "the same tools and technologies that are used today to secure storage, computing and network resources all apply in a grid architecture."

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Groups Grapple With Grid Security

SEVERAL INDUSTRY GROUPS are researching grid security as more companies begin looking at grids as a way to improve resource utilization and computing power.

For example, The Globus Alliance is working on a wide range of grid-related technologies and standards issues. The group has developed the Globus Toolkit, which is designed to enable secure communication, mutual authentication and single sign-on in a grid environment.

The tool kit is based on an open-source implementation of the Grid Security Infrastructure standards that adds support for single sign-on and delegation of administration, according to the group's Web site.

The Globus Alliance is made up of a number of organizations, including the Argonne National Laboratory, the University of Chicago and the University of Southern California's Information Sciences Institute.

The Global Grid Forum (GGF) is working to develop security specifications within The Globus Alliance's Open Grid Services Architecture. According to Dane Skow, one of the area directors in charge of security at the GGF, the effort is focused on functions such as user authentication and authorization in a grid infrastructure.

For instance, the group is developing a conceptual grid authorization framework to help developers enable better user authorization on grid networks. Another project involves developing procedures and guidelines for enabling the use of X.509 and other technologies for cross-grid user authentication, according to the group's Web site.

The Enterprise Grid Alliance is a coalition of users and vendors that's working on grid security as part of a broader effort to address security concerns resulting from the use of shared components in a grid network. The group's goal is to use existing technologies to handle such issues.

– Jaikumar Vijayan

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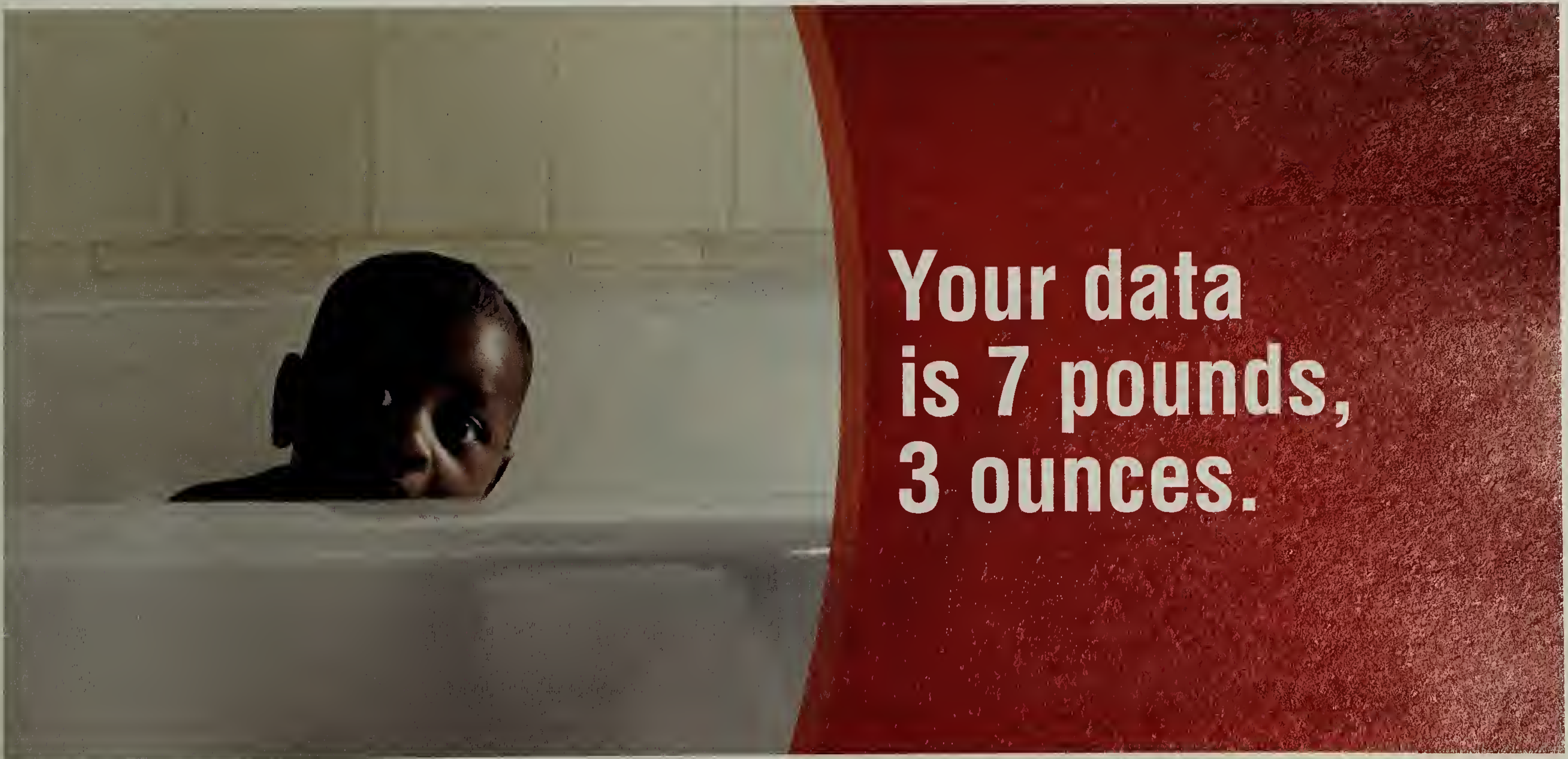

Digital Light Processing

DEFINITION

Digital Light Processing (DLP) is a system for projecting images that's based on a unique optical semiconductor chip from Texas Instruments. The chip contains millions of tiny mirrors that are individually moved by digital signals in synchronization with a light source and color wheel. The result is a sharp projected image that's clearly visible in a normally lit room.

QUICK STUDY

BY RUSSELL KAY

When one first hears about digital light processing (DLP), it seems almost impossibly complex, even magical — millions of tiny mirrors on a chip the size of your thumbnail, each of them capable of moving thousands of times per second to create a digital image. In fact, DLP (a trademark of Texas Instruments Inc.) gives new meaning to the phrase “smoke and mirrors” as it applies to computer-related technology.

How DLP Works

In essence, DLP is a nanotechnology implementation of the old survival technique of using a mirror to signal for help — its purpose is to shine a controlled series of light flashes on a target to send a message. The mirror in this case is part of an optical semiconductor called a digital micromirror device, or DMD. The DMD chip contains not one but an array of up to 2.1 million microscopic mirrors, each just 16 micrometers square (less than one-fifth the size of a human hair) and 1 micrometer apart.

The DMD chip is driven by a digital video or graphic signal in which each digital pixel corresponds to a single mirror on the DMD. Add a light source and a projection lens, and the mirrors can reflect a digital image onto a viewing screen or other surface. Each mirror is mounted on tiny hinges, so it can be tilted 12 degrees toward or away from the light source, creating a light or dark pixel on the projection surface.

The control electronics direct each mirror to tilt — in other words, to switch on and off — up to 5,000 times per second. When a mirror is switched on more frequently than off, it reflects a light gray pixel; a mirror that's switched off more often reflects a darker-gray pixel. This lets DLP project up to 1,024 shades of gray.

To get color, such as for a TV set, a rotating color wheel (with red, green and blue filters) is put between the white light source and the DMD. The control input delivers separate signals for each of the three colors, and each mirror (i.e., each pixel) is switched on and off as the filter rotates each color between the lamp and DMD.

For example, to project a yellow pixel, a mirror will reflect only red and green light to the projection surface. To project a purple pixel, that mirror will be switched off while the blue filter is in position, and the blue and yellow flashes will alternate so rapidly, our brains will blend them together and we'll see purple. This process allows a DLP system to produce up to 16.1 million colors. Older DLP systems also included a clear segment to bump up overall brightness at the expense of color saturation.

Consumer-grade television monitors use the system described above. For very large projection, such as in movie theaters and auditoriums, a more sophisticated system uses three DMD chips, one for each color, plus an optical prism. The prism splits white light into colors and then recombines the three images before sending them through the projection lens. This system, called DLP Cinema, can produce 35 trillion colors.

In most applications, DLP competes directly with LCD projection. DLP typically offers greater contrast (up to 5,000-to-1 vs. LCD's 800-to-1), with better blacks, while LCD produces greater color saturation. Side by side, an LCD display looks slightly sharper than a DLP in text display applications, but DLP has the edge with moving video, reducing pixelation, or the “screen-door effect.”

The TI optical semiconductor chip that makes DLP possible.

In digital light processing, an image, in this case the head of a pin, is projected by a semiconductor chip that contains millions of tiny mirrors.

The brightest projectors still use LCD technology, which is slightly more efficient, but the smallest, lightest projectors use DLP. In 2003, DLP systems accounted for 13% of the market for large-screen televisions (over 40 inches), according to The NPD Group Inc., a Port Washington, N.Y.-based consultancy. In the past year, the number of models of DLP TVs has tripled.

DLP's Origins

The DMD chip was invented in 1987 by TI scientist Larry Hornbeck, who had been exploring the manipulation of reflected light since 1977. In 1992, TI started a project to explore the DMD's commercial viability. A year later, it named the new technology DLP and formed a separate group (now called the DLP Products division) to develop commercial display applications.

In 1994, TI demonstrated prototype DLP projectors for the first time. The technology's promise was quickly recognized. In 1997, the Academy of Motion Picture Arts and Sciences chose DLP to project film at the Oscars, where the first three-chip DLP technology was demonstrated to the Hollywood community.

In 1999, DLP Cinema was first demonstrated to the public with the release of *Star Wars Episode I: The Phantom Menace*. By December 2002, TI had shipped 2 million DLP subsystems.

DLP Products has also received two Emmy Awards, for broadcast excellence in 1998 and for technology and engineering in 2003. In 2002, Hornbeck was elected a fellow of the International Society for Optical Engineering and received the David Sarnoff Medal from the Society of Motion Picture and Television Engineers. **50870**

Kay is a Computerworld *contributing writer. You can reach him at russkay@charter.net.*

THE RAINBOW EFFECT

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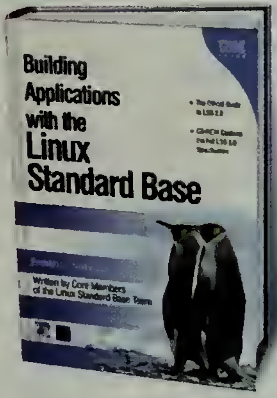
LINING UP YOUR LINUX LIBRARY

These four titles will help provide the guidance you might need to the open-source operating system.

BOOK REVIEWS

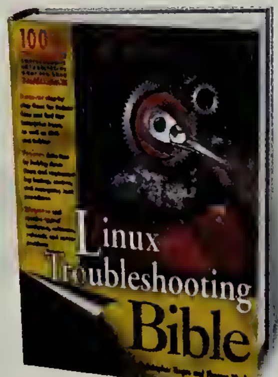
One given in the world of IT is that to succeed, you must never stop learning. With that in mind, four recent books on Linux are definitely worth your time.

— Todd R. Weiss

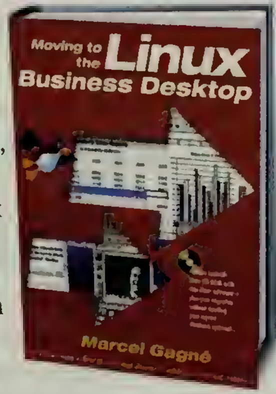


Building Applications With the Linux Standard Base, by Theodore Ts'o and the Linux Standard Base Team (IBM Press; 246 pages, $44.99). Now that the Free Standards Group has adopted its Linux Standard Base 2.0 specifications, Linux advocates hope to see more developers writing applications that will run on any LSB-compliant Linux. That's where this book comes in. Written by key developers of the LSB team, it's a step-by-step guide to making applications LSB-friendly. The book covers development issues in detail, including binary compatibility, application packaging and installation protocols, porting applications from Unix, working with runtime libraries and application troubleshooting and testing.

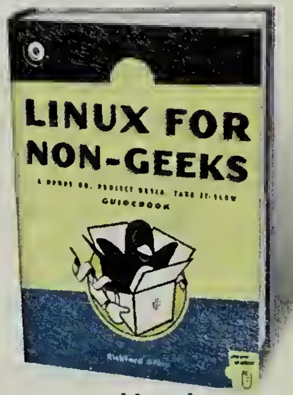
If you weren't sure how to start writing useful programs for Linux, here's a good place to begin.



Linux Troubleshooting Bible, by Christopher Negus and Thomas Weeks (Wiley Publishing Inc.; 598 pages, $29.99). For users of Red Hat Inc.'s Fedora Linux or Enterprise Linux, this is a valuable nuts-and-bolts guidebook to the intricacies of the open-source operating system. Information about every kind of technical snafu can be found in this book, which covers installation problems, backup and migration issues, printer glitches, intrusion and security concerns and more. The sections are well thought out, with background theory on key subjects as well as detailed instructions on how to approach, diagnose and repair problems. The book largely focuses on the free Fedora operating system, with the idea that by gaining the skills needed for Fedora, technicians will be better able to relate to Red Hat's enterprise product lines. The book also touches on software from SUSE Linux AG and the Debian Project.



Moving to the Linux Business Desktop, by Marcel Gagne (Addison-Wesley Pearson Education; 665 pages, $44.99). This book tackles almost every conceivable question about moving a corporate desktop system from Windows to Linux. All of the unique nuances of Linux are covered, from configuring printers to file sharing, Web services, user and systems management hierarchies, the Linux command-line and shell environments, as well as dual booting and installation strategies. Also highlighted in an often humorous style are topics such as office productivity applications, Internet browsing with Linux and more. This book will help you put a feature-rich, reliable and flexible operating system on your users' PCs.



Linux for Non-Geeks, by Rickford Grant (No Starch Press Inc.; 308 pages, $34.95). After you've followed the steps suggested in *Moving to the Linux Business Desktop*, consider giving a copy of *Linux for Non-Geeks* to all employees in your company to help them get acclimated to their new Linux world. This easy-to-read handbook isn't for the Linux gurus on your staff. It's for the folks who need to know how to use Linux from the most elemental level. This will teach newbies how to feel confident and comfortable as they explore Linux, and it will open their minds to new possibilities in the workplace, making your Linux deployment a success from the start. **50971**

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VPN Evolution Progressing to SSL

One VPN technology is decommissioned, but the replacement causes problems. SSL offers some answers, but there are still issues to be resolved. By Mathias Thurman

FOR SEVERAL YEARS, my company used Microsoft Corp.'s Point-to-Point Tunneling Protocol (PPTP) to provide remote users with VPN access to corporate resources. This worked well, and almost all employees who had PPTP permissions were comfortable with this method. But after several security problems with PPTP were reported, we decided about a year ago to deploy virtual private network concentrators from Cisco Systems Inc. at all of our core points of presence.

We ran things in parallel for about six months to let users get used to this new way of connecting. Users were instructed to download the Cisco VPN client and associated profile and start using the Cisco client. During that period, if the users had problems, they could always fall back on the PPTP connection until the issue was resolved.

That option disappeared about a month ago, though, when we pulled the plug on our PPTP servers. Now, all users have to use the Cisco VPN client. Many global e-mail messages were sent to users about this impending action, but by the time we were ready to retire our PPTP servers, several hundred users were still using it. We tried to advise each of them of the change, but about 50 were traveling, on vacation or otherwise out of reach. This wasn't so bad, considering that we have more than 7,000 employees using the VPN. Our company has a global presence, so some users we have to communicate with don't speak English and work out of their homes on the other side of the world.

Now we have a new set of issues. A particularly loud group in the company is reporting problems with the Cisco VPN client. These users are mostly in sales and need access to demos on the network and sales databases. What makes them loud is that they generate revenue, so they usually get what they want.

SECURITY MANAGER'S JOURNAL

The problem is that customers block the ports necessary for the VPN clients to communicate with our VPN gateways. Similar difficulties are experienced by users in hotel rooms for the same reason. This isn't a Cisco issue, mind you; almost any IPsec VPN client would have similar problems.

Meanwhile, we have had numerous requests for access to corporate mail from kiosks. Users have said that when they can't use their company-issued computer — be it at a conference or a coffee shop — they would like to be able to get into their Microsoft Exchange e-mail and calendar.

> **A particularly loud group in the company is reporting problems with the Cisco VPN client. What makes them loud is that they generate revenue, so they usually get what they want.**

We have contemplated extending Microsoft Outlook Web Access externally, but we don't want to do so without robust authentication, access control and encryption.

SSL Solution

With both of these problems in mind, we've decided to explore using Secure Sockets Layer VPNs. This technology has been around for quite some time, and almost every Web browser on the market today supports SSL, otherwise known as HTTPS, secure HTTP or HTTP over SSL.

A VPN over SSL is almost guaranteed to solve the problems employees have been having at customer sites, since almost every company lets its employees make outbound Port 80 (standard HTTP) and Port 443 (secure HTTP) connections.

SSL VPN will also let us extend Outlook Web Access to remote users, but there are two more problems. First, this type of VPN is primarily beneficial for Web-based applications. Second, employees who run complex applications such as PeopleSoft or Oracle, or who need to administer Unix systems via a terminal session, will most likely need to run the Cisco VPN client. That's because it provides a secure connection between their client and our network, whereas an SSL VPN provides a secure connection between the client and the application. So we'll be keeping our Cisco VPN infrastructure and adding an SSL VPN alternative.

The second problem we anticipate concerns users who need to access internal Web-based resources from a kiosk. Many of the SSL VPN technologies require a thin client to be downloaded to the desktop. Many SSL VPN vendors claim that their products are clientless. While this may be true for pure Web-based applications, a Java applet or ActiveX control object must be downloaded to the desktop/laptop/kiosk before any specialized application can be executed.

The problem is that most kiosks are locked down with a policy that prevents users from downloading or installing software. That means we have to look at alternative means of addressing the kiosk scenario. We'll also want to find a vendor that provides a secure browser and client log-off that wipes all traces of activity from the computer, including cached credentials, cached Web pages, temp files and cookies. And we'll want to deploy an SSL infrastructure that allows for two-factor authentication, namely our SecurID tokens.

Of course, this will incur an additional cost per user, since the SecurID tokens, whether soft or hard, are pricey. In addition, the enterprise deployment of SecurID tokens is no trivial task. It is, however, on the security road map, which I'll discuss in a future article.

As for an SSL VPN, we're looking at offerings from Cisco and Sunnyvale, Calif.-based Juniper Networks Inc. Juniper recently acquired Neoteris, which has been a longtime leader in SSL.

As with any new technology we introduce, we'll come up with a set of requirements and conduct rigorous testing to ensure that we have addressed deployment, management, support and, of course, security. ▶

WHAT DO YOU THINK?

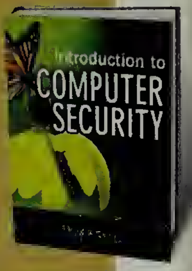
This week's journal is written by a real security manager, "Mathias Thurman," whose name and employer have been disguised for obvious reasons. Contact him at mathias_thurman@yahoo.com, or join the discussion in our forum: **QuickLink a1590**

To find a complete archive of our Security Manager's Journals, go online to **computerworld.com/secjournal**

SECURITY LOG

Security Bookshelf

- ***Introduction to Computer Security*, by Matt Bishop (Addison-Wesley Professional, 2004).**



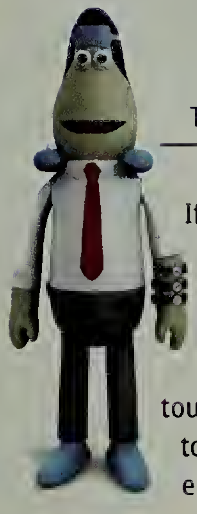
Don't be fooled by that "introduction." I found myself scratching my head several times. This book is thorough and quite technical, especially in the area of cryptography, where Bishop does a nice job of balancing the mathematical aspects with application. Anyone new to the computer security field will want to check out that section. And anyone studying for a CISSP certification will benefit as well, as Bishop covers some of the areas within the common bodies of knowledge, such as integrity models (Clark-Wilson, Bell La Padula).

– Mathias Thurman

Cybersecurity Views to Be Aired

Amid concerns that the White House has put insufficient stress on cybersecurity, current and former administration officials will address the two-day Physical-Cyber Security Summit at George Washington University in Washington, opening Dec. 7. Robert P. Liscouski, assistant secretary for infrastructure protection at the U.S. Department of Homeland Security, will discuss how the Bush administration is differentiating cyber and physical security. Amit Yoran, who recently resigned as the DHS's top cybersecurity official, will also be a keynote speaker. His topic is "Who Will Lead in Critical Infrastructure Protection?" The conference comes in the wake of contentious debate over House intelligence bill H.R. 10, which included a provision to establish an assistant DHS secretary for cybersecurity. The administration opposed the provision, which enjoyed wide IT industry support.

Nokia for Business



Time Zone Tim

If it's Thursday, it must be Brussels. Or Bangkok. Or maybe Birmingham. Come to think of it, intrepid road warrior Time Zone Tim often has to look at the local phone directory when he wakes up to know where his travels have taken him. But no matter where in the world Time Zone Tim may be, he's always in touch with the information he needs thanks to some innovative tools for mobile warriors like him. We caught up with Tim—where else but on his way to the airport, sipping on a double latte.

As usual, you are on the road. What are your most pressing needs when traveling the globe on business?

The first thing that pops into my mind is a business-class seat courtesy of a free upgrade, but if you mean a pressing business need, let me put it this way. When I'm with customers in Rome and they need the current status of pending orders, they don't care that the data is sitting on a server back in the main office in Phoenix. I need secure, wireless access to vital information and I can't be jumping through hoops to get it.

Has email been a problem for you?

No, not since my company began working with Nokia to provide road hounds like me with reliable wireless email. It used to be that a long cab ride in heavy traffic was just unused downtime for me. Now I use all that time to check email and message my clients. It sure beats trying to converse with a cabbie in a language I don't understand! With wireless email, I'll bet I gain another hour per day of real productivity given all the running around I do.

About the Interviewer

Bill Laberis was editor in chief of *Computerworld* for ten years (1986-1996). He is president of Bill Laberis Associates, a custom publishing and content company (www.laberis.com). His columns, Webcasts, supplements and magazines are well-known and respected throughout the high-tech industry.

Would you say that staying connected is mission-critical for you, no matter where you are?

Mission-critical—you mean like the way proper nutrition is to the human body? For people like me staying connected is everything. Last week in Tokyo, I followed a competitor into my client's office. While my competitor was trying to phone someone back home about the availability of some parts, I placed the order right there and won the business. Then we went out for some sushi. Thanks, Nokia!

What are your devices of choice for staying in touch?

I have a few, depending upon my needs. My Nokia 9500 Communicator gives me a full set of business-critical applications, fast network connectivity, and mega memory storage, sort of like taking my office on the road. And my smartphone based on the Nokia Series 60 software platform is just dynamite for voice and data communications. I use it for email, Internet browsing, and occasionally—just occasionally—a quick game of hearts.

What are the most important features of these devices?

For one thing, they have to really help me blast through my work so I can have a bit of time for one of my favorite hobbies—napping. Look, you're talking to a guy with five thumbs on each hand, technically speaking. All my access devices have to be easy enough for any normal business professional to use to quickly communicate with important contacts and access critical data. If it isn't real user friendly, chances are it isn't Nokia. Oh yeah, our IT department wants all mobile devices to be both cost-effective as well as future-proof. That's Nokia, too.

Traveling as you do and needing access to such sensitive information, aren't you worried about data security?

Yes and no. Yes I am worried about what might happen if a competitor or just about anyone else were able to get to the same data I can. That would be bad for my company and therefore bad for me. But no, I'm not really worried because Nokia has worked wonders with something our IT guys call Secure Sockets Layer or SSL, as well as with firewalls and secure VPNs to ensure that people like me practice nothing less than safe computing, anywhere and any time.

Sounds like Nokia is an excellent traveling companion for you?

You can say that again. Nokia is my traveling security blanket. Like a first-run in-flight movie, Nokia makes me feel good.

One final question: Why all the watches?

They seem to sell them everywhere I go these days and I'm a compulsive shopper. I just wish one of them would work as well as my Nokia mobile technology.

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BRIEFS

IBM Claims Record Computing Speed

■ IBM last week announced that it achieved 3.2 million transactions per minute on its DB2 v8.2 database running on an IBM eServer p5 595 with 64 Power5 processors. The company claimed that it has set a world record for computing speed and said that the previous record was 1.2 million transactions per minute. The Transaction Processing Performance Council, a nonprofit industry group that sets benchmarking standards, reported the results.

Constant Data Adds Linux Support

■ Constant Data Inc. in Minneapolis has announced the availability of the latest version of its Constant Replicator software, featuring expanded support for all major 2.4 and 2.6 kernel Linux operating systems, as well as Mac OS X, Sun Solaris and IBM AIX. Constant Replicator is a continuous, real-time data replication application for use in business continuity, data distribution and high-performance computing projects, according to the company. Pricing starts at $7,200 for one primary and one remote server with a year of support.

ObjectWeb Gains Open-Source Portal

■ Paris-based eXo Platform SARL has joined the ObjectWeb Consortium and is making its enterprise portal code available under the GNU General Public License. EXo Platform is an open-source enterprise portal that enables users to have a customized single point of access to their companies' information systems and resources. ObjectWeb said the portal should encourage wider use of its open-source Java 2 Enterprise Edition software. With eXo Platform, ObjectWeb adds a Web application suite layer to its open-source middleware components for corporate computing, which includes the J2EE 1.4 application server.

DANIEL J. WEITZNER

Buildings Become Information Systems

THE TRANSPARENT ENTERPRISE is characterized by increased data integration possibilities across formerly stovepiped databases. Now, even the buildings that house our transparent enterprises are becoming transparent themselves. In response to the demands of energy efficiency, security, lower operating costs and the need to increase space-planning flexibility, the physical structures in which we work are on their way to becoming more closely integrated with our information infrastructure.

DANIEL J. WEITZNER is technology and society domain lead at the World Wide Web Consortium and principal research scientist at the MIT Computer Science and Artificial Intelligence Laboratory. The opinions expressed are his alone. You can reach him at djweitzner@csail.mit.edu

Consider these new requirements in the design of building systems and some of the issues they raise:

■ **Secure access control:** Linking the provisioning of RFID-type security systems to human resources systems will ensure that the right employees get through the right doors. This will require organizations to make sure appropriate privacy policies and practices are in place.

■ **Energy efficiency:** Electric power demand-monitoring systems promise cheaper power and higher levels of availability from the public power grid. Enterprise users must be ready to have their power utilization monitored and possibly even controlled down to the individual device level for this to work.

■ **Security:** Video monitoring of premises for both external and internal security purposes is increasingly common. We can hope that this improves the physical security of our buildings, but whether it does or not, it certainly makes the environment more transparent — or intrusive, depending on which side of the camera one sits.

■ **Building signage:** Even building signs (e.g., lobby directories, special-purpose meeting-instruction signs and emergency exits) are being integrated in the interoperable building of the future. On arrival in an unfamiliar building, it will be nice to have signs that are dynamically configured to point us in the right direction. I'm not sure how I'll feel, however, when information screens in every elevator lobby of a high-rise inform me — and every other occupant — that my car has been towed out of the parking lot because I'm two months late on my parking fees.

In support of these goals, building systems, once the domain of HVAC engineers and security services, are becoming just one more information system. As with our other information systems, the first design requirement is that it be built on open standards for interoperability. The International Standards Organization has even released a standard (ISO 16484-5:2003) that "defines data communication services and protocols for computer equipment used for monitoring and control of heating, ventilation, air conditioning and refrigeration, and other building systems." The aim of the standard is to facilitate "the application and use of digital control technology in buildings."

As buildings become more automated, formerly disparate components (HVAC, LANs, security systems and even signage) will become interoperable with one another and with other information systems traditionally considered beyond the boundaries of the building systems themselves [QuickLink 47651].

This is the fourth in a series of columns on the transparent enterprise.

New "interoperable" building systems represent a dramatic change in design and function from even the most complex systems of the past. The critical change is that today's "smart" buildings have APIs that allow the buildings' physical systems to be linked, as any other piece of software, to other parts of an enterprise information system. The interface between building systems and the rest of the enterprise information infrastructure will now be defined by a series of SOAP message formats and the exchange of XML-formatted data.

In my own workplace — the new Frank Gehry-designed Stata Center, home of the MIT's Computer Science and Artificial Intelligence Laboratory — some of the world's leading computer scientists are trying to sort out technical and policy designs to make our new, whiz-bang security system function in a more privacy-friendly and transparent way. Addressing these issues when new systems are being considered, or even when buildings are designed, may save a lot of trouble. We can learn to live with transparency if we give it some advance thought and take the time to discuss what to expect with the people who are about to participate in this new technology. I'll have more to say about developments in the building where I work in another column.

The transparent building raises the design stakes for efforts to ensure the integrity, reliability and accuracy of enterprise information systems. Today, system faults may result in a sales order being lost or an employee's paycheck being delayed. Tomorrow, with more transparent and dynamic links between building systems and current information systems, the results could be an employee locked out of the office, power shutting down in a building at the wrong time or embarrassing information being flashed across the building's public information displays. **50988**

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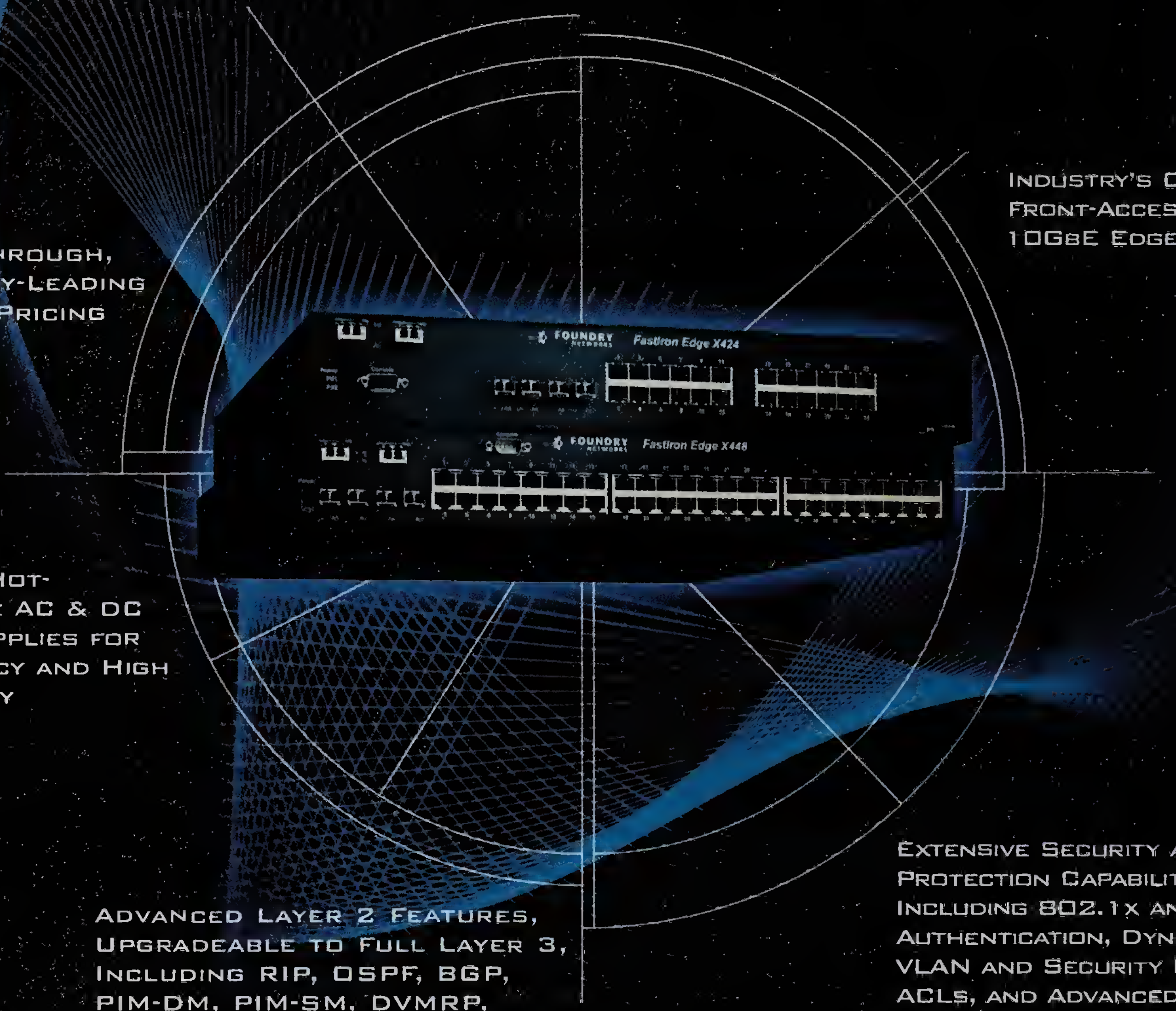

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MANAGEMENT

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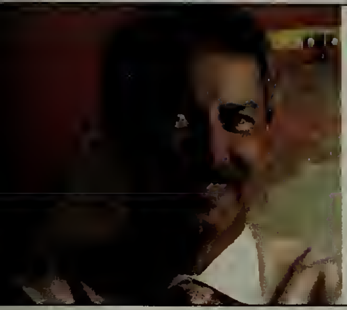

IT MENTOR

So You Want to Be a Consultant

Think you're ready to take the leap from IT practitioner to hired expert? CIO Doug Lewis has been there, and he says you'd better answer these five questions first. **Page 44**

BOOK REVIEWS

Alignment, Alignment, Alignment

Thomas Hoffman reviews three books on the topic du jour in IT — business/IT alignment. And he appraises his already dog-eared project management bible. **Page 46**

OPINION

One Born Every Minute

When projects tank, people often act surprised. But Gopal Kapur says only a sucker wouldn't see these failures coming. **Page 48**

Anything BUT IT

Many students see an advanced degree in IT as a ticket to obsolescence and outsourcing. They have other plans.

BY DAN VERTON

EDUCATORS and IT industry executives are warning that a crisis is looming in the IT job market. Only this time, it's not that there are too many job hunters seeking too few positions. To the contrary, they say that the U.S. isn't producing IT experts in the quantity and quality that it needs to remain the leader of the global IT market.

In an effort to search out the views and perceptions that may be fueling this approaching crisis, *Computerworld* interviewed a dozen undergraduate and graduate students who are preparing for careers in IT, as well as professors responsible for training them and executives who are recruiting them into the workforce.

Students told us that advanced technical degrees are expensive and may not provide the skills they need to be competitive in the job market. Many plan to seek business degrees instead of technical degrees in graduate school because they fear that they are more likely to be outsourced if they don't have business qualifications

Elsewhere in academia, prominent academics have been warning for years that the U.S. is producing far too few advanced degree holders in the computer science and IT research fields. In 1997, for example, Eugene Spafford, a professor of computer science at Purdue University in West Lafayette, Ind., warned members of Congress that of 5,500 doctorates in computer science and engineering awarded by North American universities between 1992 and 1997, only eight were awarded to U.S. citizens.

In a new study, Corey Schou, director of the National Information Assurance Training and Education Center at Idaho State University in Pocatello, says that the dearth of people with advanced degrees in IT continues. And while the number of two- and four-year degree programs in IT-related fields is rising, the student base has dropped.

Fears of Outsourcing

"At present, there is a lack of interest in this discipline," says Mathew J. Palakal, chairman of the Department of Computer and Information Sciences at Purdue. "This could be due to the uncertainties in the job market. Outsourcing is on everybody's mind, and computer science is considered as a high-risk career choice."

Students echo that concern. Fears of outsourcing played a role in Katherine Farmer's decision to seek an advanced degree. Farmer is studying computer engineering and computer science at the Thayer School of Engineering at

RICH LILLASH

Students Speak Out

HAYDEN HAYES
Senior
University of Alabama
Tuscaloosa

Hayes is studying management information systems. "The outlook for IT positions is terrific," he says. "Because of the nature of our MIS program here, I believe it will be relatively easy to find the job I desire."

He may have a point. The university has partnered with some of the world's leading companies to provide direction, real-world experience, internships and placement. For example, Hayes has completed two internships and several part-time jobs with the likes of Procter & Gamble Co., Harbert Management Corp. and the Alabama Department of Transportation.

Describing his experiences, Hayes sounds like a veteran IT professional. At Harbert, "I led project scoping, functional requirements analysis, RFP issuance, vendor evaluation and selection, data conversion, training, user acceptance, and I oversaw vendor implementation," he says. "At P&G, I led projects in the supply chain, inventory management and warehouse management systems division involving process design, process redesign and a feasibility assessment."

But with all of this real-world experience, Hayes says an advanced business degree, not a technical degree, is probably in his future, since it would give him critical business knowledge.

MARINA KOLOMIETS
Graduate student
Thayer School of Engineering, Dartmouth College
Hanover, N.H.

After earning a bachelor's degree in computer science, Kolomiets worked as a software engineer for two years at Motorola Inc.'s headquarters in Schaumburg, Ill., where she experienced outsourcing firsthand.

"The entire software group seemed to disappear from the company, only to reappear in India and China, where the qualified labor was a lot cheaper," she recalls. Though Kolomiets' job wasn't outsourced, she saw the trend, and in 2003, "it was time to rethink my future as a software engineer in the U.S.," she says.

Despite her love for technology, Kolomiets made the tough choice to start an advanced degree in engineering management rather than in computer science. She says this will keep her competitive in a market where qualified labor can be hired cheaply in China, India and elsewhere.

Like others, Kolomiets views a management/technology hybrid as the only way to obtain a competitive advantage over purely technical workers. "A person with a master's degree in computer science would generally get no preference over somebody with a bachelor's degree and a couple of years of work experience," she explains. "The IT market is changing so rapidly that all the knowledge obtained in school becomes obsolete in a couple of years."

JUSTIN LIGAS
Senior
Marist College
Poughkeepsie, N.Y.

An IT major, Ligas has completed a three-year internship at a local bank, which gave him valuable experience in everything from IT support to migrating a major application during a corporate acquisition. Like many of his counterparts, Ligas believes a business degree with a focus on MIS would serve him better than a technical degree that will eventually become irrelevant because of the pace of technological development. "This will give me the business training I need to manage a department," he says.

WILLIAM MOSLEY
Senior
Pace University
New York

Although he expects the job market to be competitive, Mosley, who is majoring in MIS, says he knows that some IT jobs are going unfilled, because he searches online job boards and sees job postings that have been there for two years or more. Having completed two summer internships at IBM, Mosley has an offer from the company, but he plans to look at all his options before he makes a decision. Mosley says he would like to pursue an advanced degree, but he's not sure what kind. "Ideally," he says, "I would like to pursue a technical degree and a business degree."

MICHAEL ARMBRUST
Junior
Purdue University
West Lafayette, Ind.

Armbrust is pursuing a double major in computer science and mathematics. Last summer, he completed an internship at Motorola's business and government solutions division. He plans to stay in school to earn a graduate degree in computer science, but not with a view to working in IT. "I'm doing this because I would eventually like to do some kind of corporate research," he says.

– Dan Verton

Dartmouth College in Hanover, N.H. She expects to see a greater demand in the U.S. for high-level design and development work as more low-level jobs are moved offshore.

But others shun IT altogether. "I think new students are scared to get into the IT field of study," says Jeremy Bucchi, an undergrad at Marist College in Poughkeepsie, N.Y. "With all the news of shifting jobs offshore, [prospective] IT students may be tentative about pursuing a career in computers."

Palakal and others say they also fear that colleges and universities aren't teaching students what they need to know to succeed in the U.S. IT job market, particularly as new security pressures raise the bar for what it means to be skilled in IT.

"There is a disconnect between what most universities teach and what is needed in the job market," says Palakal. "A traditional computer science curriculum prepares students for academic pursuit and not necessarily for the business world. The business community then must train the graduates to make them employable."

Scott Orr, a network engineer at Purdue, says many universities are now establishing industrial advisory boards to counsel faculty about current IT needs and to better prepare students for the workforce.

Yet despite the impending crisis, current demand is still low. Mike Kendall, president of Kendall Placement Group Inc. in St. Louis, says most firms slowed recruiting during the recession and are only now beginning to once again hire recent college graduates.

After suspending university and college recruiting for several years, ThoughtWorks Inc., a systems integrator in Chicago, resumed recruiting recent graduates in 2004.

Despite having hired only five recent U.S. graduates so far, the global IT professional services firm is launching an intensive immersion program for new recruits. In an interesting twist, the ThoughtWorks boot camp is based overseas.

"As part of our new-hire program, we are sending all of our entry-level hires to a three-month boot camp located in our Bangalore, India, office," says Sonia Muhaimeen, a senior recruiter at ThoughtWorks U.S.

In the new world of global IT, workers need more than just technical skill, she says. "Our people must be a cultural fit as well as being extremely savvy technical individuals." 50655

PUBLIC OR PRIVATE?

KATHERINE FARMER is a graduate student studying computer engineering and computer science at Dartmouth's Thayer School of Engineering. She's keeping her eyes open for a government job because government programs often involve cutting-edge technologies, she says. She's also considering the public sector as a career option because she has concerns about the number of private-sector jobs being outsourced.

Unlike Farmer, many students view a career in government, where IT skills are desperately needed and where critical research and development is often done, as a road to technical irrelevancy. Kevin Decker, a Purdue computer science undergrad, says he would never apply for a government position. "Most government organizations lack a free-thinking, progressive culture," he says. "That's not where I want to be."

Purdue undergrad Stephen Senesac says he would consider a government job, but he shares Decker's fears about the culture. "My only concern would be that the nature of working within the bureaucratic system could become stifling," he says.

Hazel Thomas obtained a bachelor's degree in computer science at Pace University in New York and is now pursuing a master's degree in computer information systems. She says she hasn't considered government work because of the salary gap between public- and private-sector employment.

Justin Ligas agrees. "The government's largest problem is that often the pay isn't competitive," says the Marist College senior. What if the pay improved? "There would be no reason not to," he says.

– Dan Verton

LUKEWARM JOB MARKET

Career Watch: High-tech companies hired fewer college graduates this year than they did in 2003:

QuickLink 49124
www.computerworld.com

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So YOU WANT TO BE A Consultant

A CIO who's been there tells how to take the leap.

By Doug Lewis

Faced with the reality of retirement, Doug Lewis, now CIO at Carnival Corp., saw an opportunity to return to the working world as a consultant.

ANDREW ITKOFF / SILVER IMAGE

IT MENTOR

I HAD BEEN RETIRED exactly one week, and panic had already set in. What was I going to do every day? I had worked since I was 14, and I'd been in a corporate environment for the past 37 years.

After that agonizing week, I knew I wasn't emotionally ready to join the ranks of the grizzled retired guys sleeping on benches in the mall. Financially, I was ready. Emotionally, I wasn't.

OK, back to work, but doing what? I felt I was good at my chosen profession of CIO, but I didn't want to get back into the day-to-day hassle the job brings with it. I had thought many times about trying consulting but had always opted for the security of a "real job." It was a big decision, so I decided to use the outplacement service that came as part of my retirement package to help me make it.

My outplacement counselor listened to my story and introduced me to a staff member who specialized in consulting start-ups. He gave me some fantastic advice. He told me that to be successful, I had to have answers to the following five questions:

1 WHAT ARE YOU SELLING?

You need to understand and clearly state what you're offering. Perhaps more important, you need to understand what you're *not* selling. Unless you're perfectly clear on this point, you'll confuse potential customers.

For example, I was selling 17 years of experience as a CIO of four Fortune 100 companies and an executive-committee perspective on business and technology solutions. I was selling what I knew, what I could do with what I knew, and credibility. I certainly wasn't selling technical expertise!

2 WHO IS YOUR CUSTOMER? WHO IS LIKELY TO BOTH NEED WHAT YOU'RE SELLING AND BE ABLE TO WRITE THE CHECK?

I knew that my customer was going to be either a midsize-company CEO or a big-company CIO. Below that level, they couldn't afford me; above that level, they were going to buy from McKinsey. I didn't want a protracted sell cycle, so I "pitched" only to the decision-maker and not below that level.

3 HOW ARE YOU SELLING?

To build a compelling value proposition and get your story in front of a potential buyer, you have to understand and connect to one or more of your customer's key problems. The drivers may be monetary, regulatory, contractual, competitive or emotional. Unless you make a strong visceral connection between what you're selling and the customer's key challenges, you're wasting your time.

Research the company and the client *before* you make contact. Exercise your network of contacts to learn as much as possible. A quick Google search for news about both can yield insight about problems that you may be able to help solve. Hoovers.com gives companies' detailed financial results as well as lists of key executives. After you've done your research, match up what you have learned with what you can do for potential clients.

Unless you find a way to get in front of your customer, you can't even start to make any connection. You need to realistically match your "access privileges" to your selling ambitions. Unless you personally know GM's CEO, don't build your business goals around selling to him face to face.

My value proposition was to apply my experience to solve a customer's business problem. I needed not just to understand his view of his problem, but to determine the underlying causes and how to fix them.

I knew my customers would either already know me or know of me through a trusted source. I wasn't going to sell myself through a Web site, so my Rolodex was my source of potential clients.

4 HOW ARE YOU PRICING YOUR PRODUCT?

Your product is your time, your knowledge and what you can do with your knowledge. You must know how much to ask for your time as a consultant and how to best package the bill. There are a few heavy hitters getting $600 to $1,000 an hour, but there are a ton of little guys happy to get $100 an hour. Set your price below a certain point, and you're better off bagging groceries. Above a certain level, you will go a long time between engagements . . . like forever.

I decided to position my price below the heavy hitters who get $600 and up but high enough to set myself apart from the hoard of guys at $100 an hour. For some engagements, I charged on a per-hour basis at $400. I set a policy of never discounting my rate. People talk, and no one wants to pay more than the last guy paid for your services.

> **"You need to understand and clearly state what you're offering. I was selling what I knew, what I could do with what I knew, and credibility.**

For other engagements, I did a "package price." I would negotiate a price where the hourly rate was never disclosed. Some customers get riled when they see you getting $400 an hour — more than they are making — but they don't bat an eye paying a lump sum for an engagement that nets out to $400 an hour. I also charged half time for travel, and I traveled in a style consistent with that of my customer. I didn't want to be sitting in first class as my customer walked back to his seat in coach.

Sometimes, it's easier to sell the engagement in "chunks" than as a whole. I preferred to break up an engagement into discovery, planning, execution and wrap-up phases, with each phase priced separately. The discovery phase let both the client and me get a better handle on how much the rest of the engagement was going to cost. It also gave both of us an opportunity to bail out of the engagement gracefully if it wasn't a good fit. Adjust your billing strategy to the customer. After all, it's his money.

THE FIRST ENGAGEMENT

MY LEANING toward consulting got a push when I approached a local CEO asking not for a job but for advice. He said he had a couple of problems that I might be able to help him with. We agreed to talk further.

During several one-on-one meetings, we discussed his problems and how I might help. I then met with his direct reports and got their views. I submitted a proposal, got back a counterproposal that was a better fit for the company's culture, accepted the engagement, and we were off and running.

The CEO had great people, superior technology embodied in a hot new product and a solid balance sheet. He had two major problems: gaining access to senior-level decision-makers and building a solid ROI-based business case for buying his products. We decided to tackle the return-on-investment issue first.

One of the CEO's direct reports was assigned to be the internal sponsor for the project. A strong midlevel manager was assigned to ensure that we got attention from the key players and that the company would assimilate the solution. With the CEO's endorsement, we enlisted key stakeholders inside the company to help.

The first part of the engagement was a proof of concept: Could we build an ROI-based business case for the company's products? The second part was to actually build the ROI solution. This step-by-step approach to funding reassured the client that his exposure was limited in the event that things went badly. He ultimately extended the engagement to fund introducing the solution to the workforce and doing trial runs with potential clients.

As it turned out, the ROI-based business case tool and process became the solution to the C-level access issue.

– Doug Lewis

5 HOW ARE YOU GOING TO FIND YOUR NEXT BUYER?

That first customer sometimes comes easily, but when the job ends, that next engagement isn't always waiting. You have to know how you will find your second and third customers — how you will fill your "sales funnel." Lots of prospects go into the wide part of the funnel, and precious few come out the narrow end. Unless you have a way to fill it, you're in a heap of trouble.

My outplacement adviser gave me a great tip for filling the sales funnel. Ask your client for five referrals. Ask him to personally call the five and insist that they agree to a visit from you. This is much stronger than providing favorable feedback on your engagement. My adviser further suggested asking each of the five for advice on potential business outside their companies. He also recommended that I take speaking engagements and write articles.

I found the advice to be excellent. I allocated about 20% of my time to new business development. I wrote articles on subjects that interested me with the idea that other CIOs would find them interesting and might want to do business with me. I made time to speak at CIO gatherings.

I also learned to assess speaking engagements upfront after a disastrous hour discussing senior management information security strategy before an audience of ultratechies. (I had violated my principle of selling only to decision-makers who can write the check.) I helped start a regional CIO group that met monthly to hear noted speakers. I used my current engagements to leverage access to decision-makers in other companies.

In summary, the advice worked for me as a company of one. I stayed in consulting for only nine months, but I was busy the entire time. I had great clients, and I think they believe they received good value for their money.

50660

Lewis is CIO at Carnival Corp. in Miami. Contact him at dlewis@carnival.com.

Alignment, Alignment, Alignment

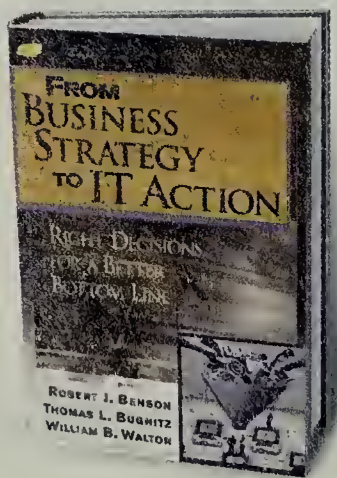
It's the topic du jour in management books. Some takes on how to achieve it; plus, a project management bible.

BOOK REVIEWS

I read lots of IT management books and try to narrow down the best ones to recommend to Computerworld*'s readers. It drives my wife crazy because the books keep pouring in and filling up my cramped home-office (a.k.a. the Cockpit). Here are some keepers (and now I can finally clear out the others).*
— Thomas Hoffman

From Business Strategy to IT Action: Right Decisions for a Better Bottom Line, by Robert J. Benson, Thomas L. Bugnitz and William B. Walton (John Wiley & Sons; 328 pages, $45).
This book's central thesis is that an organization should invest in IT only when it directly supports business strategies and operational effectiveness. Tough to argue against that.

The book provides a road map for C-level executives, including CIOs, on how to manage and invest in IT to deliver business value. The authors, each of whom is a principal at The Beta Group, an IT consulting firm in St. Louis, describe a "strategy-to-bottom-line value chain" framework that can help guide a company from business strategies to the right IT decisions.



The authors touch upon areas you'd expect them to, such as advocating the use of portfolio management tools to help organizations prioritize IT and business investments. But they take those concepts a step further by suggesting actions readers can take to achieve the right results.

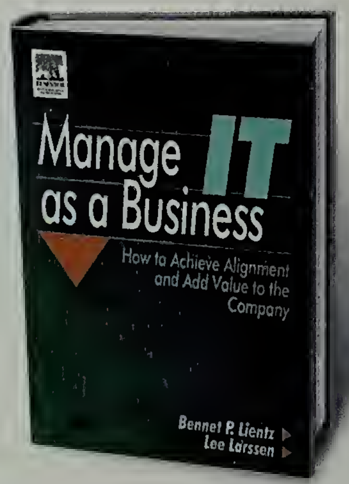
One of the features that I liked most is a section at the end of each chapter in which the authors pose questions that senior executives should ask themselves on a given topic, such as, "Are we investing new IT resources in the right places?"

This is very practical tome that takes a structured approach to slaying the old IT/business alignment dragon.

Manage IT as a Business: How to Achieve Alignment and Add Value to the Company, by Bennet P. Lientz and Lee Larssen (Elsevier Butterworth-Heinemann; 304 pages, $44.95).
While *From Business Strategy to IT Action* seems to be geared more toward senior executives, *Managing IT as a Business* appears to be written for IT and business managers who are in the trenches doing the actual work. This book is very straightforward about the problems that have afflicted IT organizations over the years, such as business alignment shortcomings and the burden of managing day-to-day operations, and it offers some fresh ideas about how to deal with these issues. One, for example, is to rate the IT organization using comprehensive performance metrics that measure such variables as the duration of projects, the use of repeatable processes and the amount of knowledge transfer gained from vendors.

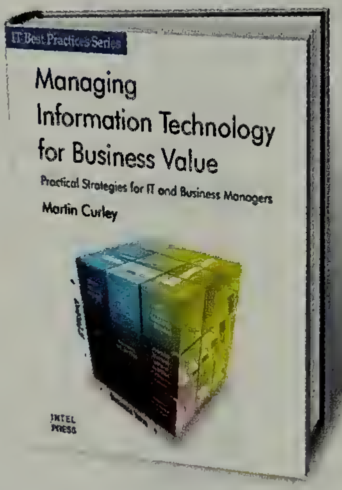
The book also tackles the misallocation of IT resources and the tendency among organizations to select projects for tactical rather than strategic reasons.

The authors have hands-on project management experience, and it shows. Lientz, a professor of information systems at the UCLA Anderson Graduate School of Management, was a project leader involved in the development of Arpanet, the precursor to the Internet. Larssen has served as an IT manager, business manager and consultant for more than 40 companies over the past 25 years. The techniques they draw upon have been implemented in more than 60 organizations around the world.



Managing Information Technology for Business Value: Practical Strategies for IT and Business Managers, by Martin Curley (Intel Press; 350 pages, $49.95).
OK, I should first admit that Intel CIO Doug Busch recommended this book, which was written by one of his colleagues. But since Intel is widely recognized as a world-class leader in terms of how it manages IT internally, I figured it was worth a read.

And it is. Curley, who is director of IT innovation for Intel Information Technology in Ireland, focuses primarily on ways to measure and manage IT's business value.



He rightly notes that return-on-investment metrics can be notoriously difficult to extrapolate from IT. That's because so many factors — from business and technical risks to the difficulty of quantifying strategic alignment — can influence the outcome.

Curley suggests that IT and business leaders consider adopting a tool that Intel has developed called the IT business value index (BVI).

According to Curley, the BVI is a decision-support tool that, when combined with portfolio management techniques, can help organizations more accurately calculate the business value generated by an IT investment. Since the BVI contains a common methodology and vocabulary, managers can use it to compare disparate IT and business investments.

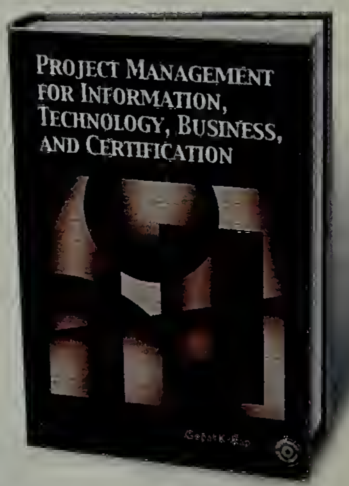
Curley offers other useful tips, such as creating an IT annual report to help detail prior-year achievements to senior management while outlining future challenges.

Considering Intel's success in IT management and the forward-thinking advice that Curley dispenses, this book is worth your time.

Project Management for Information, Technology, Business and Certification, by Gopal K. Kapur (Prentice Hall; 528 pages, $86.60).
This is one of the most comprehensive books on project management. Not that this should come as a surprise, given Kapur's pedigree as the founder of the Center for Project Management and his decades of hands-on experience in working with everyone in the enterprise, from the CEO to end users.

I found myself dog-earing page after page with insights I wanted to revisit. ("During the last two decades, there have been numerous instances where management decided to train people in the use of project management software, without first training them in project management principles and practices.")

Kapur, who's a *Computerworld* columnist, lists some of the primary reasons for project failures, including unclear business objectives, complexity and risks discovered too late in the project life cycle. He then offers advice on how to achieve success. Readers will likely be intrigued by "the mocking post" concept found on page 49 of the book.
50625



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EXEC TRACK

Webb to Join Equifax as CTO

Equifax Inc. announced that ROBERT J. WEBB will join the company as chief technology officer. Webb will report to Chairman and CEO Tom Chapman and be responsible for managing the Atlanta-based company's global IT infrastructure. Previously, Webb served as CIO in several divisions of General Electric Co. Most recently, he was managing director of Canadian vendor financing at GE.

CIO Takes COO Role at HomeGoods

ROBERT CATALDO will be promoted to chief operating officer at HomeGoods from his post as CIO of The TJX Companies Inc., a Framingham, Mass.-based retailer. Cataldo has been CIO since 2001. Prior to that, he held senior systems and finance positions at the HomeGoods division, which he joined in 1997. He also held financial positions at TJX predecessor Zayre Corp.

Healthcare Partners Names New CIO

ZAN F. CALHOUN has joined HealthCare Partners Ltd. in Los Angeles as CIO. Previously, he was president of OAO HealthCare Solutions Inc., and before that, he was director of the commercial health care consulting practice at BearingPoint Inc. (formerly KPMG Consulting).

Powell Tapped as CTO at HighBeam

HighBeam Research Inc., a Chicago-based operator of an online research engine for individuals, announced that KEITH POWELL has joined the company as vice president and CTO. He will be responsible for managing all technology functions and for the company's research and development efforts. Powell was previously a senior manager at BearingPoint.

GOPAL K. KAPUR

One Born Every Minute

THERE WE GO AGAIN. "Technical glitches in a $52 million installation of PeopleSoft Inc.'s applications at Indiana University have left thousands of students without access to promised financial aid . . ." [QuickLink 49349]. What is the explanation? According to university spokeswoman Norma Holland, "The glitches were not caused by the system proper."

From this statement I would gather that Holland seems to think that software is the "system proper." She doesn't realize that a system is the *amalgamation* of software, processes and people.

GOPAL K. KAPUR is president of the Center for Project Management in San Ramon, Calif., and author of *Project Management for Information, Technology, Business and Certification* (Prentice Hall, 2004). Contact him at *www.gkapur@center4pm.com.*

Any project manager worth her work-breakdown structure knows that for a system to be successful, it is imperative that the work processes be aligned to the system processes and that users be trained in a timely manner — far ahead of the delivery of the technology. As part of due diligence for any proposed system, the project manager must ask the following questions:

- ■ What degree of change will the new system bring to the processes currently being followed?
- ■ Will the users be willing to make the necessary changes?
- ■ Are the users ready to make the necessary changes?
- ■ What is the latest time by which the users must be made ready?

Obviously, either these questions weren't asked, or if they were asked, no follow-up plans were put into place at the university. As a result, with classes looming, the IT team ran out of time for system testing and user training.

Was the date for the start of classes an unknown? If the team had any project management sense, it would have established "runaway triggers" for system testing and end-user training. Those would have made the project manager aware of the impending delays, and the team could have done one of the following:

- ■ Speed up the project to finish the system testing and user training in a timely manner.
- ■ Implement contingency procedures and work-arounds.
- ■ Suspend the project in an orderly way until the next window of opportunity — the following semester.

Obviously, IT staffers didn't have a systematic status-tracking process in place and simply ran into the start-of-classes wall. Then they blamed the wall for being there. And apparently they waited until the end of the project to start training the users. Smart project managers (and sponsors) know that user training must begin well in advance of the system implementation.

But there's more. Another university spokeswoman, Sue Williams, said, "Most problems were caused by interface issues between the PeopleSoft application and the loan systems at lending institutions. . . ."

Is one to believe that the interface was unexpected and sprung onto the university's PeopleSoft system out of left field? The data interface with external systems, a perennial problem, must be investigated as a part of the project planning process. These questions should have been asked:

- ■ What is the quality of incoming data?
- ■ What volumes of data will need to be handled?
- ■ What will be the frequency of data transmission?
- ■ Will there be any media/infrastructure incompatibility?
- ■ Will the data be available in a timely manner?
- ■ Are there any cross-system data dependencies?

Obviously, none of that took place or this fiasco wouldn't have happened.

Williams says the financial aid module is "big and complex." That is what scope parsing is all about: chunking a big project into smaller, progressive scope modules. Why didn't the sponsor (if there was one) make sure that the complex project was broken into smaller chunks? Instead, the IT team brought all eight campuses live in a single cycle, knowing very well the inherent complexity of the endeavor. As a result, 3,000 students, many of their parents and hundreds of landlords were left in the lurch.

How many ways did this project violate project management best practices?

1. Poor or no due diligence.
2. No user training.
3. Absence of system status alerts.
4. System interface problems were ignored.
5. The complex project wasn't broken down into progressively delivered smaller chunks.

If after all the missteps the university is still a "happy customer," as stated by PeopleSoft, then it should step right up and buy a ticket to see the genuine two-headed double-talking happy monkey from Mars. **50622**

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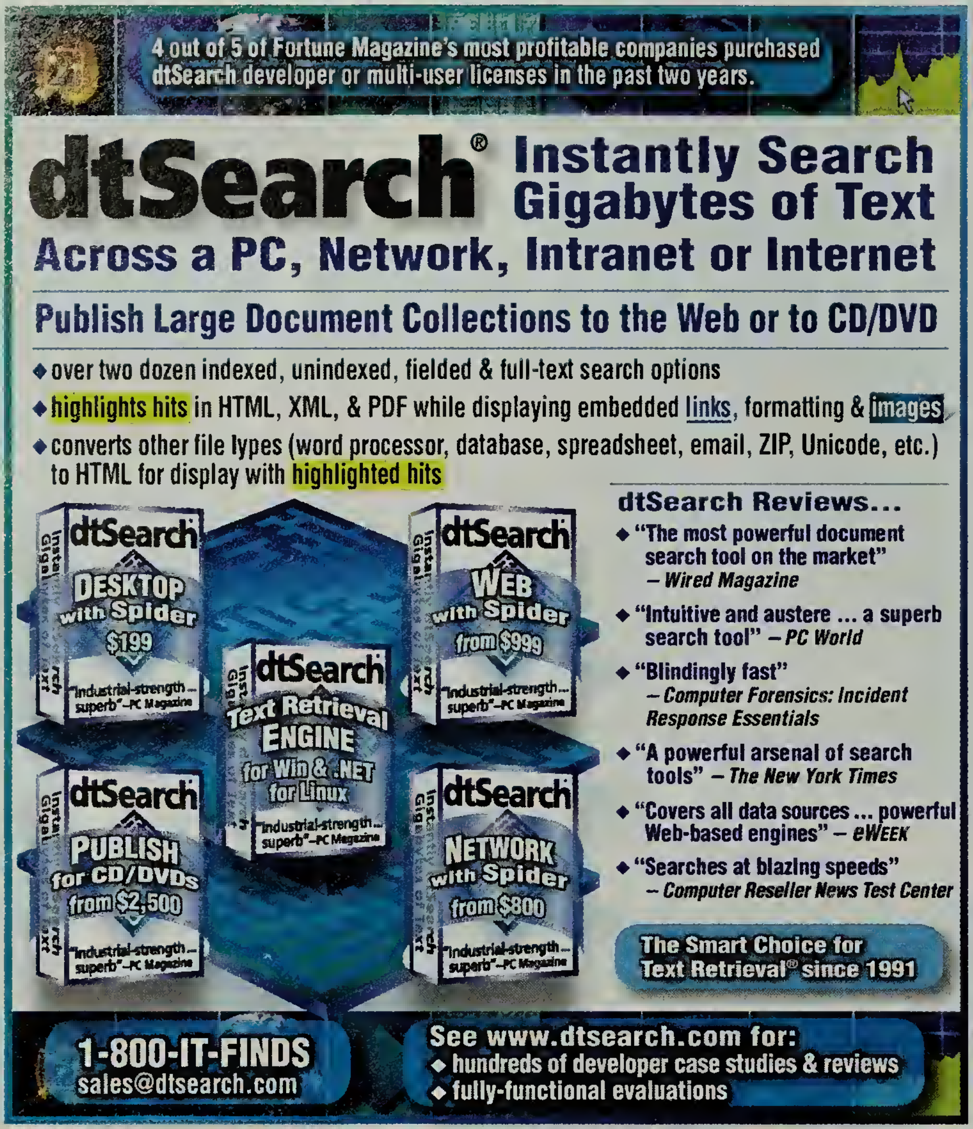

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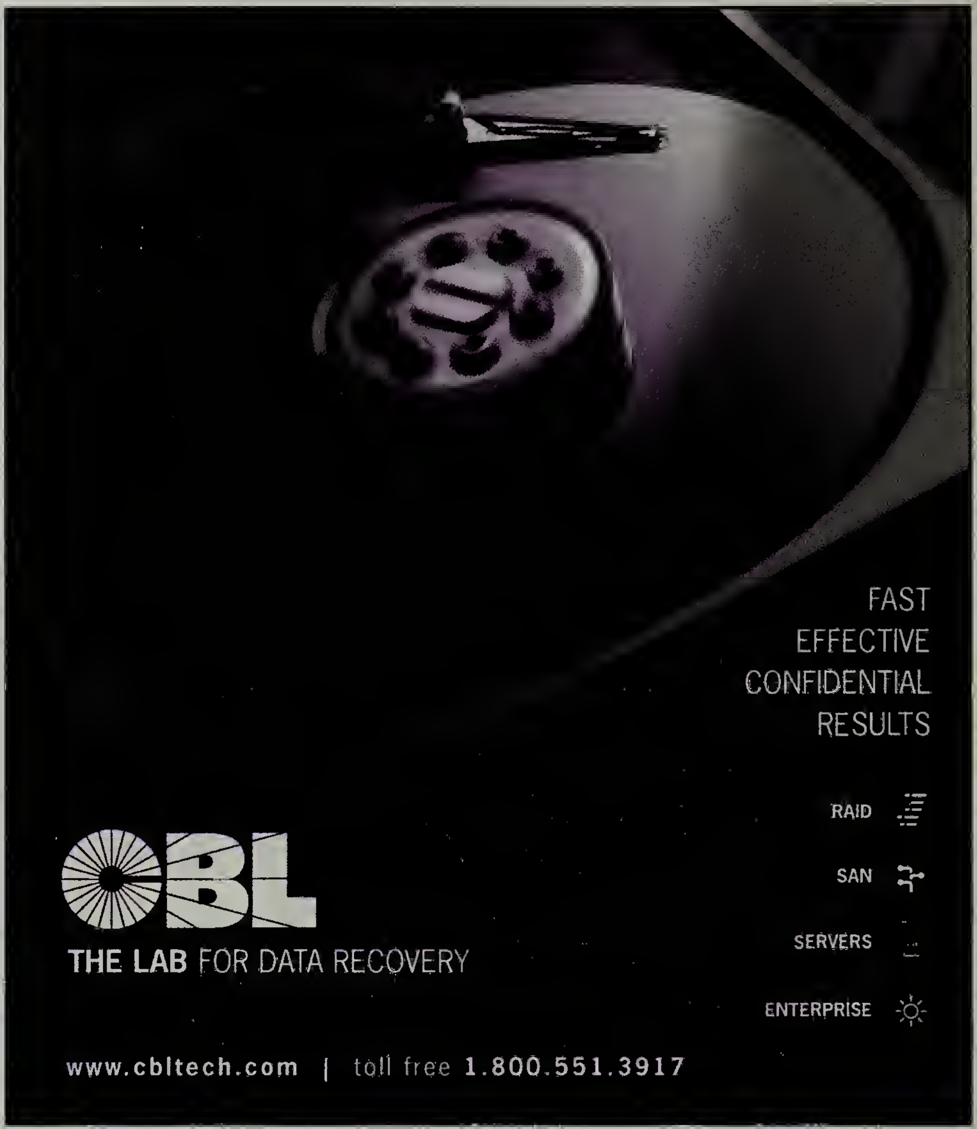

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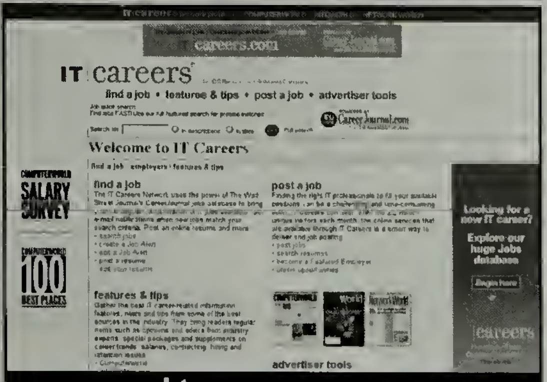
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Comp Software Engr. Analyze and design systems & programs. Design interface btwn mainframe & and client server database; Formulate engrg quality stndrs. Provide engrg support & functions for software & system problems. Determine feasibility of design, train in-house staff. Requirements; BA in computer Science or equiv or foreign equivalent and 2 yrs related experience. 40 hours/ week 8:00 A.M. to 5:00 P.M. Location of employment will be Highway 268-E, North Wilkesboro, North Carolina. Send resumes to Marc L. Kinney, Project Manager, Comforce Technologies, 6470 East Johns Crossing, Suite 170, Duluth, GA 30097.

Programmer/Analyst needed for Software Development, Services & BPO firm located in Burlington, VT. Job duties include: Analyze, design, develop, and integrate CRM based applications. Use SQL server, HTML, XML, and COM. Use object oriented technologies. Applicant must have B.S. degree in Computer Science, Business, Math or Engineering. Applicant must also have 2 yrs. exp. in the job duties described above or in any computer related occupation which must include skills listed above. 40hrs/wk, 8:00am-5:00pm, Mon-Fri, $60,000/yr. Send resumes to: Job No. 29794, P.O. Box 488, Montpelier, VT 05601-0488.

IT Technicians needed. Seeking qual. candidates with BS or equiv. &/or rel. work exp. Part of req. rel. exp. must include 1 year working w/network routers. Duties include: provide technical assistance & training for users in 20 Houston facilities, maintain backup & Lotus Notes Domino Server/Client, purchase computer equip. for all Houston facilities. Fwd. resume & ref. to The Salvation Army, Attn: I.T. Department, 1500 Austin St., Houston, TX 77002.

Software-Consultant: consulting for Business Process Management Solution. Degree in CS & software development experience required. Extensive travel.

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Samsung SDS America Inc. 85 W. Tasman Drive, San Jose, CA 95134 Attn: Reshma (HR).

SOFTWARE ENGINEER (4 positions) to provide on-site consulting in design, development and maintenance of large object oriented network management applications for telecom industry including NMS Applications and NetExpert VSM Rules Development using OO analysis and design, NetExpert, Unix, Java, Oracle, SQL, TL1, SNMP, SONET, ATM and FrameRelay. Require Master in Computer Science/ information Systems/ Business Administration or closely related with three years experience in the job offered or any experience providing skills in described duties. 40% travel required to client sites within the U.S. Competetive salary and benefits. 40-hour week, M-F. Mail resume to: Amanda McGannon, Operations Manager, Chemtech Ltd., 1948 Raymond Drive, Northbrook, IL 60062.

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System Administrator (Elmhurst, NY): Conduct system set-up, integration & maintenance in Windows 98/NT; configure TCP/IP protocols & d'base server; Dsgn & dvlp interfaces btw systems & d'base w/ C, VB & Oracle; Set up multilanguage-supported program; Implement backup, recovery strategy on d'base; Dsgn & maintain intranet w/ HTML & ASP. Must have MS in CS, Comp Engg or Telecommunications & Network Management + 1 yr exp. Must have skills in C, VB, TCP/IP, HTML & Oracle. Resume to HR Dept. Happy Dragon of New York, 86-02 57th Ave, Elmhurst, NY 11373.

IT Consultant (Walnut Creek, CA) Install, configure & support area network systems. Maintain network hardware & software. Monitor network & perform maintance. Solve problems & develop solutions for hardware & software. Consult w/clients. BSE in Elec. Eng/Comp. Sc +2 yrs exp reqd, 9am-5pm, 40 hrs.wk. Resumes to: Attn: Jenny Wang, Hemark Corporation, 3724 Ranch Estates Ct., Walnut Creek, CA 94598.

Lead Software Engineer to serve as Technical Lead in the development & implementation of preset filters per business unit requirements. Will write technical design document for team members, conduct design and code reviews, liaise with project team members directly on task status & report to project management. Will lead in the design of a new logic to create partial bar data for ATP Charts; design, develop and implement performance test tools for measuring Charts, Filters and Time and Sales request response, and will be responsible for system integration testing of different Vhayu components. Will extensively use TCL scripts, Tibco Timer API, Vhayu API and PERL scripts in a Windows 2000 Server, Visual C++, Solaris 2.8, JAVA and UNIX Shell script environment in performing above duties. Requires B.Sc. in Computer Science, Engineering, Math, or Physics plus 4 years exper in job offered, OR four 4 yrs in client server development in a UNIX environment. Candidate must also possess demonstrated expertise in the following: real-time data processing applications using TCL and Vhayu API; in using OLTP filters in TCL and PERL; and in developing financial marketing data feed middleware using RV timer and PERL. Salary: $86,200/yr, M-F, 9AM-5PM. Send 2 resumes to Job Order # 2004-1373, P.O. Box 989, Concord, NH 03302-0989. EOE. Applicants must be U.S. workers eligible to accept full-time employment in U.S.

Seeking qualified applicants for the following positions in Orlando, FL: Senior Programmer Analyst. Formulate/ define functional requirements and documentation based on accepted user criteria. Requirements: Bachelor's degree or equivalent* in computer science, MIS, mathematics, engineering or related field plus 5 years of experience in systems/applications development. Experience with C++, UNIX and Shell Scripting (UNIX Shell Script or Perl Script) also required. *Master's degree in appropriate field will offset 2 years of general experience. Submit resumes to Sudhir Jahagirdar, FedEx Corporate Services, 1900 Summit Tower Blvd., Suite 1400, Orlando, FL 32810. EOE M/F/D/V.

PROGRAMMER ANALYSTS (multiple positions) sought by Edison, NJ-based s/ware consultancy firm. Must have 2 yrs of relevant software experience. Respond to: AK Systems, Inc, 100 Metroplex Drive, Suite 303, Edison, NJ 08817 or http://www.aksystems-inc.com/joinnow.htm.

Statera, Inc. seeks applicants for the position of Software Consultant (Programmer/Analyst) in Greenwood Village, CO to design and develop new web-based Java software applications as well as enhancements and modifications to existing software. Requirements include a bachelor's degree in business, computer science or related field and working knowledge of Java Servlets, Enterprise Java Beans, Apache Application Server and Unix-Solaris. Respond by resume to Karey Brown, Statera, 8101 E. Prentice Ave., Ste. 700, Greenwood Village, CO 80111.

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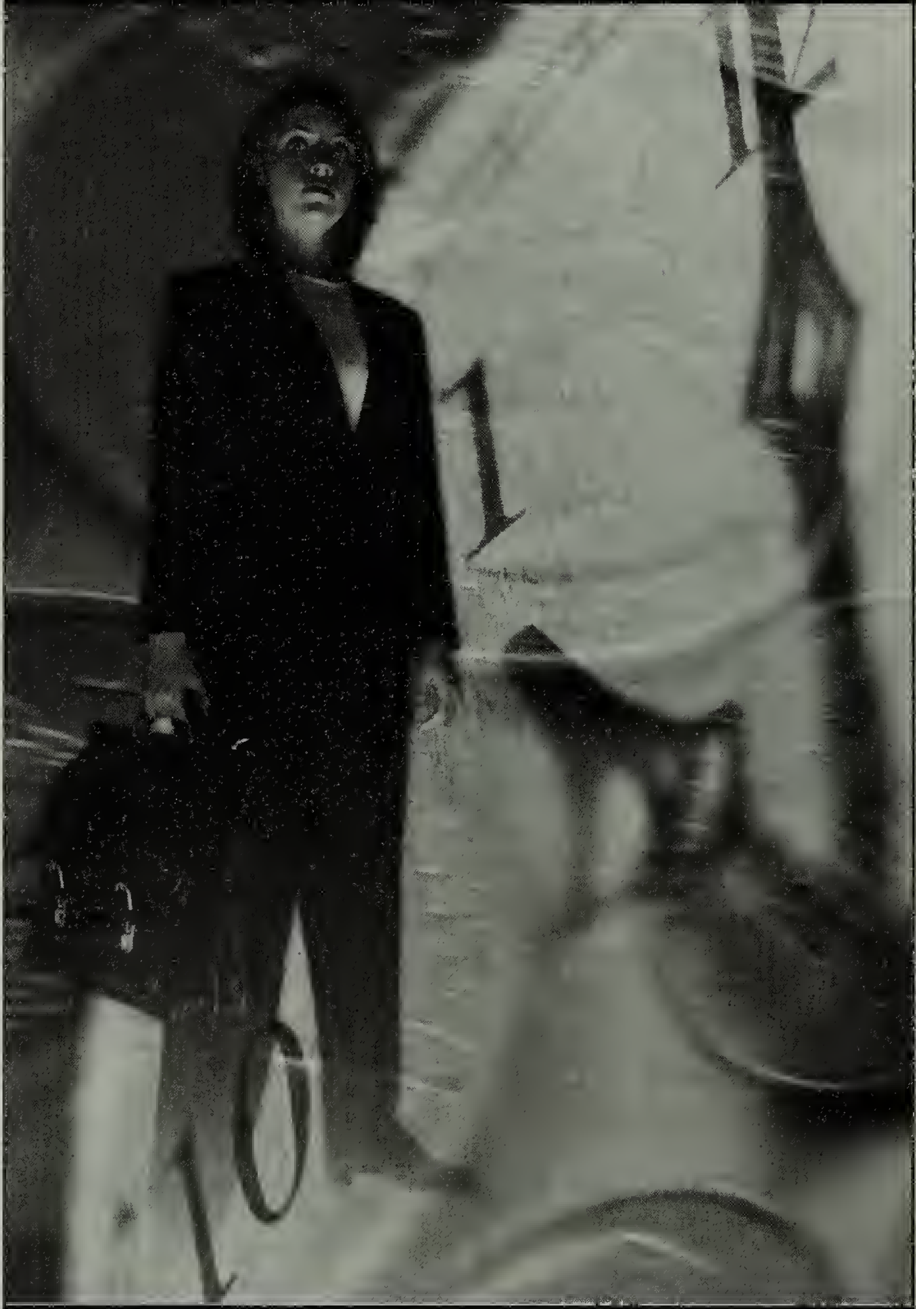

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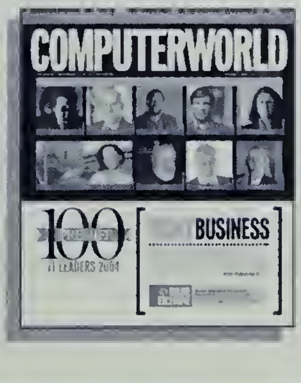

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Siebel Technical Architect

Customize & implement Siebel CRM package with information systems including analysis, requirements definition, design, construction & integration with company applications. 40 Hrs., M-F, 9am-5:30pm, Job located in Miami, FL, $73,000. Req: B.S. or equiv. in Computer Sc., Engineering or Math & 2 yrs of exp. Resumes to: Agency for Workforce Innovation P.O. Box 10869 Tallahassee, FL 32302. Ref. Job Order #FL-2579777

Programmer Analyst: Develop info. sys. on Unix/Linux platforms with duties of: web appls. migration fr. CGI/Perl/Javascript/ Informix to Apache / Mod_Perl / MySQL / XML / pdflib with HTML Template; C++/Win 32 API/ Pro*C, Java/JNI/Swing and Informix 4GL appls. enhancement and conversion to Perl/TK; Apache configuration and web/db appls. tuning; reprogramming automated codes including Unix shell scripts; tech. support & user training. Require BS in Comp. Sc., CIS, or MIS plus 6 mon. exp. Full-time. Apply to: Mark Shashek, VP-CIO, Cassens Transport Co. 145 N. Kansas St. Edwardsville, IL 62025. NO CALL/EOE.

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Programmer/Analyst needed for Software Development, Services & BPO firm located in Burlington, VT. Job duties include: Analyze, design, develop and implement computer applications for clients located throughout the U.S. Use Java, XML, Tomcat, Rational Rose, Oracle and J2EE technologies. Applicant must have B.S. degree in Computer Science, Business, Math or Engineering. Applicant must also have 1 yr. exp. in the job duties described above or in any computer related occupation which must include skills listed above. 40hrs/wk, 8:00am-5:00pm, Mon-Fri, $60,000/yr. Send resumes to: Job No. 29816, P.O. Box 488, Montpelier, VT 05601-0488.

Software Engineers, & Programmer Analysts needed for RI based IT firm. Will need Bach + 2 yrs of exp for Jr. Lvl positions or Masters +1 yr or Bach + 5 yrs exp for Sr. Lvl Positions with Various skills req: SAP, PeopleSoft, Siebel, Oracle ERP, Business Objects, Cognos, Oracle, Informatica, Java, C, C++, Win NT, UNIX, HTML, DHTML, DB2, JavaScript, VB, COM, SQL Server, ASP, Servlets, PL/SQL, Perl, Sun Solaris, CISCO, DHCP/DNS/ WINS, Cisco PIX firewalls, CISCO IP Telephony. Apply with 2 copies of resume to H.R. Dept, MCS Global, Inc., One Richmond Square, Suite # 134C, Providence, RI 02906.

S/ware Consultancy firm in Metro Atlanta area seeks following people with B.S. in Comp Sci, Engg or equiv plus 2 yrs exp as indicated:

- Software Engineers (multiple positions): 2 yrs exp in Web apps with ColdFusion or ASP, Oracle or SQL server reporting, Crystal Reports, and JavaScript
- Business Analyst: 2 yrs exp in SAP SD and BW for business/financial systems.

Respond to: HR Dept., Horizon Int'l Trd., Inc., 1875 Graves Road, Norcross, GA 30093.

Software Engineer to participate in full cycle of software engineering activities and lead team in analysis of requirements, design, development and maintenance of applications and technical specifications; testing; implementation and documentation. Requires BS in Computer Science, Engineering or closely related field plus 4 yrs experience as Applications Developer of applications for auto industry which must include Web Logic, ClearCase, ClearQuest, Rational Rose, Load Runner, J2EE. Send resume to IS Human Resources, Attn: JMVL, Crawford Group, 600 Corporate Park Dr., St. Louis, MO 63105.

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Software Engineer/Systems Analyst/Database Administrator/ Network Administrator Milwaukee, WI. Must have bachelors degree or equivalent and experience in some of the following skills: C/C++, Java, Web Methods, Cold Fusion, Microsoft Technologies (Visual Basic, .NET, ASP) CRM (Siebel, Clarify, Vantive), Middle Ware Technologies (Orbix, Corba, Tibco, Vitria) Data Ware Housing Tools (Informatica, Data Stage, Abinitio, Business Objects, Cognos, Micro Strategy, Brio) ERP (SAP, People Soft, Oracle Apps, Baan), Mainframe (Cobol, CICS, JCL, VSAM) AS400, Ecommerce, Databases (SQL Server/Oracle/ DB2/Sybase), Microsoft Windows (95/98/NT/2000,Exchange), UNIX (Sun Solaris, HP, AIX), Linux and QA (Win Runner, Load Runner, Silk, Quickpro, Manual Testing). Position requirement: Must be willing to travel and /or relocate per project specification. Mail your resumes to: jobs@iksolutionsinc.com or Human Resource Director, IK Solutions Inc, 1840 N. Farwell Ave, Suite # 306 Milwaukee, WI 53202.

Programmer/Analyst needed for Software Development, Services & BPO firm located in Burlington, VT. Job duties include: Analyze, design, implement and code applications for clients located throughout the U.S. Use J2EE technologies, WebLogic, EJB, Webmethods, and Ariba. Applicant must have B.S. degree in Computer Science, Business, Math or Engineering. Applicant must also have 2 yrs. exp. in the job duties described above or in any computer related occupation which must include skills listed above. 40hrs/wk, 8:00am-5:00pm, Mon-Fri, $60,000/yr. Send resumes to: Job No. 29790, P.O. Box 488, Montpelier, VT 05601-0488.

Software Engineers: Design/ develop internet appls. in Windows/Unix applying OO tech. & using C/C++, Java, JSP, Servlet & EJB; design appls. for pricing engine to obtain data fr. Oracle db using Tuxedo, ProC, Triggers, Unix Shell Scripts, PL/ SQL, & Weblogic; develop GUI screen using JavaScript, HTML and VB; troubleshooting, testing and debugging. Require BS/BA or the equivalent in Comp.Sci., Engr, MIS, or in a closely related field plus min.3 yrs exp. and be able to perform all duties on the day of employment. Full time. Resume to The Crawford Group, Inc. at isjobs@erac.com. Refer to CW11/29/04SRSWE in the subject line. NO CALL/EOE.

Senior Software Engineer to serve as development lead in design & development of real time pricing application servers and adapters and run time libraries on UNIX (Solaris) platform using C/C++, Java, Perl, Rogue Wave libraries, TIBCO APIs, and locally developed FPX-API. Responsible for project management; definition of technical requirements; vendor & client communication and task coordination among team members. Assist infrastructure team in installation & verification tasks in production environment; develop User Exit shared libraries for release 3.0 reengineering project; support & maintain mapping tables and TIBCO data dictionary; provide technical & application support for pricing applications & TIBCO software components; solve data content issues that occur in production & provide training courses to support engineers. Requires Bachelor's in Comp. Sci., Eng., Math, or Physics plus 3 years exper in Job Offered OR 3 yrs in design & implementation of market data feed middleware. Candidate must also possess demonstrated expertise in the following: developing data extraction and normalization applications and middleware using Rogue Wave APIs and TIBCO APTs in UNIX/LINUX environment; in object-oriented design, analysis & programming in C++, Java, Perl and Shell scripts; and in performance tuning and memory management using Rational Quantify and Purify, and in source control management and defect tracking using Rational ClearCase and ClearQuest. Salary: $86,200/yr, M-F, 9PM–5PM. Send 2 copies of resume/letter of application to Job Order #: 2004-484, P.O. Box 989, Concord, NH 03302-0989. EOE. Applicants must be U.S. workers eligible to accept full-time employment in U.S.

F/T Jr. Software Engineer. Responsible for developing full lifecycle object oriented software. Design of application's specifications using JNI, JMS, Signed Applet, JAAS Security using Struts 1.1, JMX, XML, Apache Tomcat, Visual Source Safe, UML modeling using Rational-Rose 98 and ErEwin. Enhancement of applications documentation of software user requirements, running a real time operating system viz Windows 95, 98, 2000, NT, and LINUX using JAVA RMI. Application server deployment using JRUN 3.2, JBOSS 3.0.0 and Netscape Application Server 4.0. Must have a Bachelor's degree in Electronics Engineering, related field or foreign degree equivalent. Must have 2 yrs. of exp. in job offered or a position with same duties. Salary: Competitive. Send resume to: Srivatsan Ramchandran, AMI, 6145-F Northbelt Pkwy., Norcross, GA 30071.

Client Server Operations Specialist - Clarify Administration

Provide technical administration & customization for the Clarify CRM product (application) in Windows NT/2000/XP, i.e., Clarify maintenance, customizing forms, system architecting, system re-engineering, database optimizations, integrating user interface, database modeling, database tuning. Creating prototypes, writing shell scripts, triggers, stored procedures, code migration & testing. 40 Hrs., M-F, 9am-6pm, Job located in Miami, FL, $56,000. Req. B.S. or equiv. in Computer Sc., Engineering or Math, & 2 Yrs. Exp. Resumes to: Agency for Workforce Innovation P.O. Box 10869, Tallahassee, FL 32302. Ref. Job Order #2579780.

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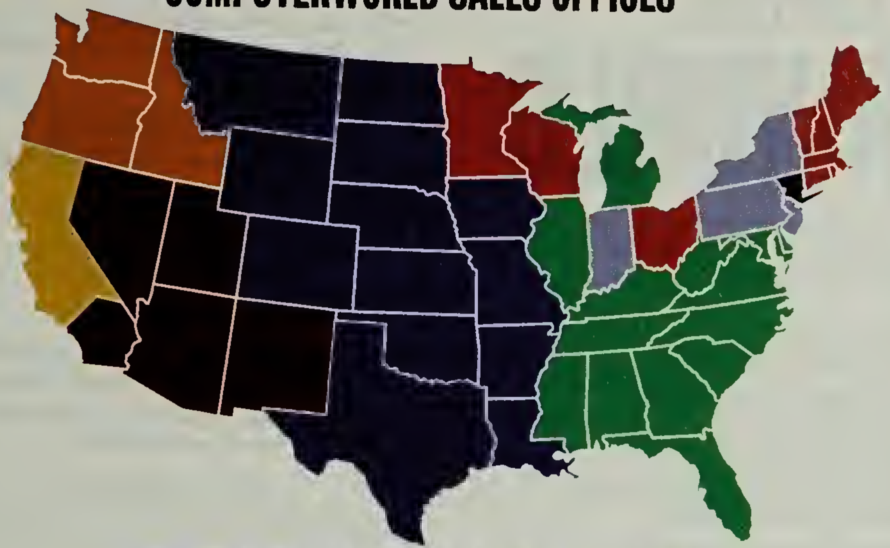

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Emulex Set to Ship Switch-on-a-Chip

Chip offers support for old and new disk technology

BY LUCAS MEARIAN

Emulex Corp. today plans to bring out a switch-on-a-chip that will let storage vendors develop devices that can mix and match Fibre Channel disk arrays with different performance characteristics. The switch also allows users to upgrade their storage without throwing out existing systems.

Jed Dobson, a system architect at Dartmouth College in Hanover, N.H., said he likes the idea of switching between Fibre Channel arrays that perform at different levels within the same enclosure, because it would let him tailor storage service levels to end users according to how critical the data is.

Dobson has about 12TB of storage on several Sun Microsystems Inc. arrays, and his switches serve up 1Gbit/sec. and 2Gbit/sec. Fibre Channel throughput. "My next purchase of Fibre Channel switches will probably be in the 4Gbit/sec. range, so that [chip is] attractive," Dobson said. "I have about 64 ports of 2Gbit/sec. Fibre Channel storage, so I'd probably want to keep those because it was a pretty big cost."

Rick Villars, an analyst at IDC, said the advent of Emulex's FibreSpy SOC 804 family of embedded storage switches will give vendors and users more flexibility, especially in larger storage arrays where there are hundreds of disks that aren't always immediately populated. Users could continue to grow the arrays as disk technology develops, he said.

"Long-term end users will have the option to use a lower-cost disk subsystem," Villars said. "You replace the controller and the disk and the switches, but you don't have to pull the whole box out."

Bob Brencic, senior director of switch marketing at Costa Mesa, Calif.-based Emulex, said the chips come with four Fibre Channel ports each but can be configured in five-chip clusters for up to 20 ports in a single storage enclosure.

The switched chip also allows array manufacturers to break Fibre Channel's 126-device barrier to allow thousands of disk drives to be attached to storage controllers in boxes, Brencic said.

He added that the internal switching will also simplify storage management because IT administrators can use the native management tools of the array instead of having to deal with external switch management tools. "OEMs can build those storage management tools right into the chip," he said. **51058**

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Firefox

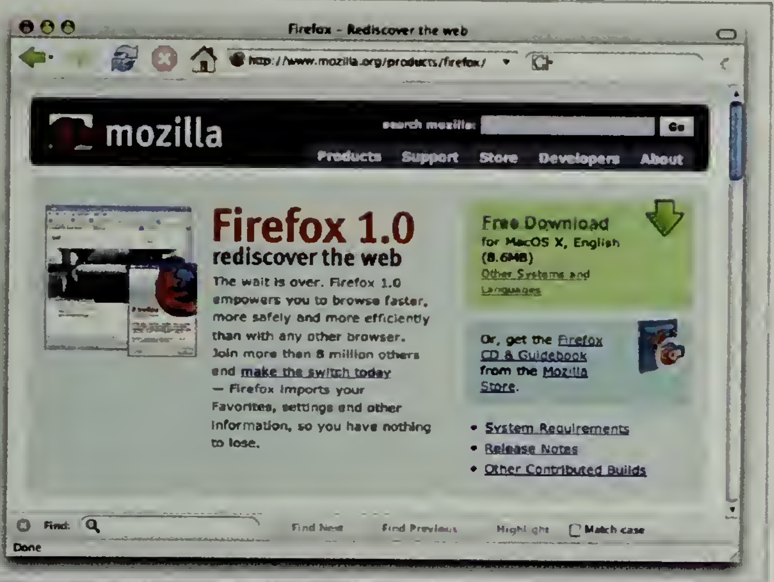
or use it on a personal basis. But 17 said that their companies have no current plans to re-evaluate their decisions to go with Internet Explorer.

"We've been standardized on Microsoft Internet Explorer for as long as we've had a standard," said Patricia Coffey, an assistant vice president in IT at Allstate Insurance Co. in Northbrook, Ill. "Basically, we run Microsoft on the desktop as our standard, so we use IE, Office, Outlook, etc."

Allstate's "big gripe ... is the security issues with Microsoft," Coffey said. But she added that the insurer is content with IE from a features standpoint.

Security is the reason why Jefferson County in Colorado ordered its 2,000 government workers to switch to Firefox about five months ago, said David Gallaher, the county's director of IT development. Gallaher said he came to view IE as "a VDS — a virus distribution system."

"It's hazardous to your corporate health," said Gallaher. "You have to turn off everything that makes Internet Explorer interesting just to avoid the impact of the viruses. Even Microsoft employees have told us, 'You should turn off ActiveX controls.' "



Firefox 1.0
rediscover the web

The wait is over. Firefox 1.0 empowers you to browse faster, more safely and more efficiently than with any other browser. Join more than 8 million others and make the switch today — Firefox imports your Favorites, settings and other information, so you have nothing to lose.

Or, get the Firefox CD & Guidebook from the Mozilla Store.

FIREFOX 1.0 includes tabbed browsing capabilities, a built-in pop-up blocker, integrated Google search and various security features.

Jefferson County ran the beta version of Firefox and is moving to Version 1.0. Gallaher said the migration has gone well, except for components in a few applications that don't yet support Firefox, including the county's enterprise document management system. But he said the application vendors have indicated that they will fix the problems.

Mark's Work Wearhouse Ltd., a Calgary, Alberta-based retail chain, encountered Firefox support problems with the Web sites of some of its suppliers and business partners, according to CIO Robin Lynas. For example, the pages on a courier company's site wouldn't render properly with the new browser. But the courier has since fixed the problem, Lynas said.

Those glitches haven't deterred Mark's Work Wearhouse from standardizing on Firefox as the underlying browser for its in-store systems. Lynas said the decision was a natural one, since the retailer's cash registers already run Linux.

Joe Hartman, an application development manager at HydroChem Industrial Services Inc. in Deer Park, Texas, said he has used Firefox exclusively at home for about six months. He said that he would like to recommend that HydroChem switch to Firefox because he's concerned about IE's security as well as Microsoft's lack of "significant development on IE since Version 4."

"It now appears IE may well be on its way to becoming a second-class browser," he said.

What's making Hartman hesitant to recommend the switch to Firefox is the company's investment in Microsoft's Dynamic HTML technology for its intranet applications.

Feature Attraction

One alluring feature in Firefox is a tabbed browsing capability, which Internet Explorer lacks. Tabbed browsing allows users to load pages from multiple sites without having to open a new browser window for each one. The tabs make it easier to switch back and forth between the sites.

The feature is "real handy," said Gallaher, adding, "What has Microsoft done with IE for the last few years? They've ignored it."

Gary Schare, a director of product management at Microsoft, disputed that assertion. He claimed that Microsoft continues to make major investments in Internet Explorer, including significant security enhancements that were part of Windows XP Service Pack 2. Schare added that Microsoft partners and independent software vendors are developing add-ons for IE and even complete browsers with tabbed browsing capabilities built on top of it.

Carroll Pleasant, a systems associate at Eastman Chemical Co. in Kingsport, Tenn., said his company is sticking with Internet Explorer as its standard browser. "Nothing else is practical for us," he said. "We have a significant number of internal systems that are dependent on IE."

Ping Inc. also plans to continue using Internet Explorer, said David Chacon, a technical services manager at the Phoenix-based maker of golf equipment. But Firefox "has really raised the bar on functionality and usability," Chacon said. "I hope Microsoft is taking notes." **51063**

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FRANK HAYES ▪ FRANKLY SPEAKING

Staying a Step Ahead

THINK YOU'LL BE ABLE to choose your own schedule for utility computing? Think again. Last week, the BBC reported online that students may soon be using a pay-as-you-go computing utility on a routine basis. And not computer science students, either — these are student animators [QuickLink a5160].

Hewlett-Packard's research lab in Bristol, England, just launched a rendering service for small animation companies to test its grid computing model. The animators create their designs, then HP's computing grids turn them into 3-D animated films. Several participants told the BBC they expect students to be using the utility soon.

At that point, the grid plan will be out of our hands.

We know how it will happen. We've seen it before. As long as a technology is too difficult, complicated or expensive for anyone except IT departments to use, IT shops can keep a firm grip on how we roll it out, and when. But if the technology gets cheap and simple enough for non-IT people to use, we lose control.

It happened with PCs and spreadsheets, with the Web and handheld computers and wireless network access points. Users get their hands on a new technology. They figure it out. Then they want to use it for business — and if the IT department isn't ready, users start without us.

So now that HP Labs Bristol has started up its Frame Factory animation-rendering utility service, the clock is ticking. Today, a handful of small animation studios use the service to create short cartoons. Soon, students will use it. Then the idea will expand beyond Bristol. Other rendering services will be launched. It won't be long before we have student animators using rendering grids in our own backyards.

Those student animators won't have to be technical wizards. They'll use design software on desktop workstations, and the actual workings of how their designs are turned into fancy, textured 3-D images may be a mystery to them. But they'll understand the concept of a computing utility, and they'll have hands-on experience using it.

In fact, they'll understand it better than we do.

FRANK HAYES, *Computerworld*'s senior news columnist, has covered IT for more than 20 years. Contact him at frank_hayes@computerworld.com.

Let's face it — most IT shops aren't ready for utility computing today. Some of us are dipping a toe in, but we all know it's still very early. Most of us plan to wait until standards are set and someone explains it to us.

But when students get access to utility computing, our plans won't matter. Those student animators — and the college friends they hang around with — are just a few years away from landing in our marketing and sales and advertising departments.

When they tell their bosses that they were using pay-as-you-go processing when they were in school, we in IT won't be able to convince anyone that utility computing isn't ready yet. We'll have to make it happen — or they'll find utility computing vendors without us.

Then we'll have to play catch-up as we try to pull their utility computing projects back under IT's control. It'll be PCs and handhelds and wireless access points all over again.

But that's not all bad news.

Look, if users figure out utility computing, we won't have to explain it to them. They'll already understand the business value. They'll know it's useful. They'll even tell us how.

True, that means we won't be setting the utility computing agenda. But our job is to make IT serve the business, remember?

If we pay attention and time it right, we can make our jump into utility computing after the bloodiest part of the bleeding edge is past — but still just before users start asking us for it.

And if that means grids don't arrive for us exactly on the schedule we'd choose — well, at least this time we'll have a hand in the plan. **51030**

Complex World, Simple Minds

New hire doesn't seem to have a knack for IT at this bank, so pilot fish puts him to work logging ATM problems. "I stepped him through the basics as he took his first call," fish says. "He dutifully logged the location and the nature of the problem, then asked me what time he should note in that column. I nodded up at the wall clock and responded, 'Right now.' " Later, fish finds newbie has recorded the incident exactly as instructed – and filled the time column with "right now."

SHARK TANK

Penny-Wise

This company has sites in two cities that need to swap data securely. "I suggest that we purchase a router for about $1,000 and set up a VPN tunnel between the sites," says an insider pilot fish. "We only needed one because we had an extra router already." Too pricey, says the boss; just use regular phone lines. Fish does. The first month's long-distance phone bill: more than $3,000. Says fish, "Soon after that bill, the router and the tunnel got set up *real* quick."

It Happens

This server runs fine all day but crashes every night during an unattended backup, and sysadmin pilot fish can't see why. "I could run the backup during the day without problems," fish says. "I decided to start replacing hardware, opened the system and found mouse droppings in the bottom of the case." Looks like the mice are using the network card as a toilet, and it shorts out – but dries out enough by morning to work. Fish's solution? "Sealing the case, replacing the network card and putting out some mouse traps."

February, Expanded

Flash back to 1987: This company uses a complicated data translation and verification program with customers' data. Defining the input data is tricky – "Typically, you get a lot of errors or you get none," says a pilot fish working there. But for one new customer, a 10,000-record file kicks out just two errors. They're both birthdays – and they're recorded as "Feb. 30." Customer's explanation: "If we don't know the day of the month for a birthday, we default it to the 30th."

Troubleshoot This!

Each day, user runs the application this pilot fish developed, generating a spreadsheet that's then uploaded to the company's Web site. When fish takes a weeklong vacation, he leaves user his cell phone number and explains that though he'll be a continent away, with Internet access, he can remotely troubleshoot problems. Thursday afternoon, the phone rings. User: "Help me! The Internet is down! I can't send my transmission! Fix it!"

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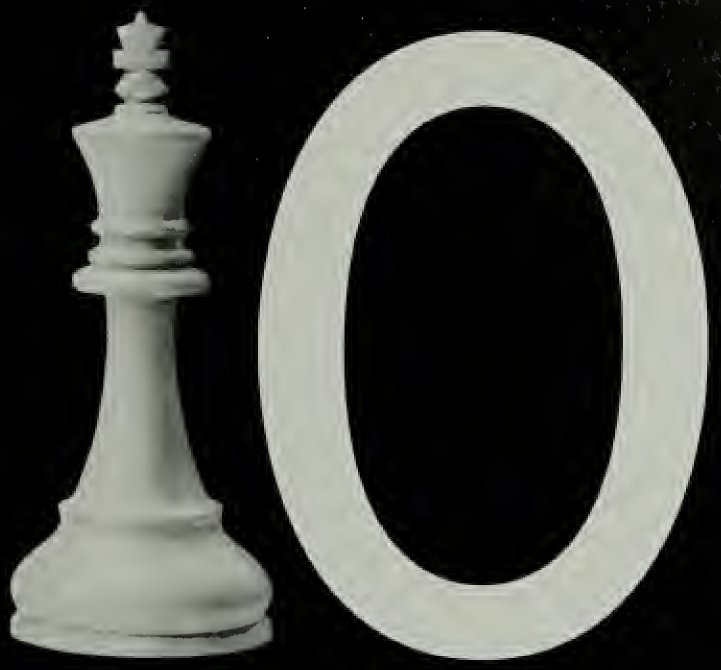

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